BUSINESS HORIZONS

SPRING, 1960 VOL. 3, NO. 1

Contents

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SPRING 1960 | VOL. 3 NO. 1

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WALTER BUCKINGHAM

The Human Side of Automation

Walter Buckingham is Professor of Industrial Management at Georgia Institute of Technology. In addition to acting as a consultant to a public utility company and as a director of a life insurance company, he frequently serves as an arbitrator in labor-management disputes.

Automation is a technology in the sense that it is science applied to the industrial arts. But it is much more than that. As a philosophy of production, it is destined to be a primary determinant of events in our time. The social consequences and effects on lives of individuals should be weighed while there is still time to do something about them. 19

H. D. MALONEY

Four Economic Revolutions: 1940-1960

An economist with special interests in international economics and money and banking, H. D. Maloney is Associate Professor of Economics at De Pauw University. His interest in fundamental changes in the U.S. economy stems in part from his studies of recent recessions.

During the past twenty years, America has been reshaped by fundamental and irreversible socioeconomic alterations. Four basic changes—in income, liquidity, price structures, and public policy—have occurred that are so deep and pervasive they warrant the name "revolutions." Now, a fifth revolution in international relations may turn out to be the most significant of all. 29

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AUTHOR | **ARTICLE**

JOSEPH R. HARTLEY

Yesterday's Shipping Clerk—Today's Traffic Manager

Author of books on the St. Lawrence Seaway and Ohio River traffic, Joseph R. Hartley has also contributed numerous articles to business and professional journals. He is an Associate Professor of Transportation at Indiana University. During the past year, he served as a transportation consultant on an economic mission in Colombia, South America.

In a nation where more people are moving more things than ever before, the traffic manager's role is fast expanding in scope and complexity. Fifty years ago, traffic management was a routine clerical operation; in today's modern corporation, it is a highly specialized job handled by management people. Their skill is influential in determining not only a product's delivered price, but also the company's competitive position. 42

GEORGE A. STEINER

Civilian Problems in Surviving Attack

A faculty member at the University of California, Mr. Steiner is also Managing Editor of *The California Management Review*. He is the author of *Government's Role in Economic Life* and several other books and articles dealing with problems of war and economic mobilization.

Modern wars are total wars. National survival may depend on how much of a country's population and resources can be saved from enemy attack. Civilian defense has not received enough attention in the United States, and this could prove to be the Achilles' heel of our defense setup. Plans and preparations for civilian survival take time and trouble, but without them, we court disaster. 52

ALBERT RAVENHOLT

A specialist on the Far East since the start of World War II, Albert Ravenholt has served as a correspondent in China, Burma, India, Indo-China, and the Philippines. Since 1948, he has written for the *Chicago Daily News* Foreign Service. At present, he is also associated with the American Universities Field Staff.

A Trip to Red China

A decade ago, the Communists came to power in an impoverished, strife-torn China faced with hunger and chaos. Today, they have world-power status and are striving mightily to spread their influence throughout Asia and the world. Recently, a group of Filipinos visited China. What they saw and did there and their impressions should be of interest to everyone in the Western world. 74

R. RUSSELL DICKSON, JR.

As an economist with the Arabian American Oil Company, Russell Dickson helped develop their discounted-cash-flow techniques. He is now manager of the Special Studies Department at Socony Mobil Oil Company, Inc.

How Discounted-Cash-Flow Analysis Reshapes Capital Programs

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MARVIN FRANKEL

Marvin Frankel is a Research Associate Professor at the University of Illinois. He is the author of a book comparing British and American manufacturing productivity, and has written articles on industrial planning in Great Britain and on obsolescence and technological change.

The Cards to Watch in Russia's Economic Hand

As the East-West economic struggle grows in intensity and touches an ever-increasing number of people, strengths and weaknesses of each side can be better evaluated. Soviet weaknesses are many, but they are not the whole story. The danger lies in Soviet strength—their central control of resources and their ability to shape economic and social patterns are factors to watch. 91

BYRUM E. CARTER

Byrum E. Carter is Associate Professor of Government at Indiana University. He is the author of *The Office of Prime Minister,* published in Great Britain and the United States in 1956. In 1957, he received the Lieber Award for distinguished teaching.

The Changing Face of American Democracy

The twentieth century's central themes of rapid social change and the rush of technological advance challenge the relevancy of some of our most cherished concepts. In a highly organized business society, we have powerful tensions between basic social and political ideals and present practices; we need to reinterpret our beliefs to fit the modern social context. 100

PAUL J. GORDON AND NATHAN L. SILVERSTEIN

Paul J. Gordon is an Associate Professor of Management and Nathan L. Silverstein is a Professor of Finance. Both are in the School of Business, Indiana University.

Case Study: A Family Company Calls for Help

In the modern United States economy, a common business problem occurs in the small company where the sales growth outpaces the management adjustment. In this case, most of the problems are there and all that is needed are good solutions. The reader is invited to find the real problems, formulate his own answers, and then match them with two written opinions that follow the case. 62

profiles of the future

HOME CONSTRUCTION AND FINANCING IN THE SIXTIES

by Donald H. Sauer

FEW INDUSTRIES face greater opportunities for growth and expansion during the decade ahead than housing and related industries. Major changes in residential construction and home financing have occurred in recent decades; others are currently taking place; and even more sweeping ones appear to be coming.

THE GENERAL MARKET

Rapid growth of population to totals ranging between 202.5 million and 219.5 million people by 1970, according to Bureau of Census projections, promises to be a significant force in the expansion of the American economy during the decade ahead. Assuming a continuation of 1955-57 birth rates, the Census predicts a total population of 213.8 million by 1970—an increase of more than 35 million people.

The population growth will be made up almost wholly of babies born during the decade. They will consume vast amounts of goods and services, but will not be old enough to work. Also, there will be substantial increases in the number of persons in the over-65 age groups; most of these will consume more than they produce. Only a small part of the population growth will be absorbed by existing households. By 1970, total households will exceed 61 million, compared with 51.3 million today.

The work-force population, ages 15-64, will increase by 20 million during the decade. Less than 15 million of these persons will seek employment, and of those who do, some will not be qualified for steady jobs. Nevertheless, significant advances in total man-hours of work will occur. After allowances for fractional reductions in the length of the average work week and possible increases in unemployment, increased man-hours of work could contribute annual gains in gross national product of 1.5 to 2 per cent a year during the sixties, even if productivity remained constant.

But productivity will not remain constant; it clearly will advance. The only question is at what rate. While the advance will probably be somewhat irregular, current indications point to productivity gains for the 1960-70 period averaging at least 2.5 per

Mr. Sauer is Assistant Professor of Finance and Executive Secretary of the D.B.A. Program, Indiana University. His article is based primarily on the findings of a joint research project at Indiana University in which he participated. A preliminary report of this study has been published by the U.S. Savings and Loan League under the title* The Next Decade *(Chicago, 1959).

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•

These needs are growing every day. Just the gain in population alone gives some idea of their size.

By 1970—just ten years away—there will be 40,000,000 more people in the United States. More and more communication services will be required by people, industry and defense.

So when we emphasize the need for satisfactory earnings on a continuing basis, it is for a very practical and useful purpose. It helps us, of course. But in a very real sense it helps you.

Only with adequate profits can we run the business most efficiently and take advantage of long-range economies.

Only with adequate profits can we finance and put in operation the latest advances in telephone science.

All this not only improves the service but helps to hold down the cost of providing it.

The result over the long run is bound to be better service for you at a lower price than you would otherwise have to pay.

BELL TELEPHONE SYSTEM

cent annually, the trend of the past half century. Indeed, there are strong possibilities that productivity increases will equal or exceed the 3+ per cent average annual rate experienced since World War II.

The anticipated rising employment and advancing productivity together suggest an expansion of the nation's production of goods and services at annual rates averaging 4 to 5 per cent during the decade ahead. Growth of 4.5 per cent annually would result in a gross national product of approximately $750 billion for 1970, measured in 1958 prices. With a $750 billion GNP, personal income should advance to $570 billion, yielding an increase of roughly 25 per cent in the average annual real income per household during the decade.

> I HAVE always felt that the best security for civilization is the dwelling, and that upon properly appointed and becoming dwellings depends more than anything else the improvement of mankind. Such dwellings are the nursery of all domestic virtues, and without a becoming home the exercise of those virtues is impossible.
>
> —*Disraeli*

THE HOUSING MARKET

The implications for housing in an expanding economy are clear. More people with more money means more houses. But compared with the fifties, the housing market of the sixties will not only be bigger; it will also be different.

Significant changes will take place on the supply side. The housing industry has always been considered a technological laggard. Indeed, major technological changes have been slow to come in the housebuilding industry, so slow that many critics have warned that inefficiencies and rising costs would price home builders out of the market. But important technological strides were made during the fifties, setting the stage for further improvements in the decade ahead.

The most conspicuous change to date has been the reduction of site work. Much of the work that previously was done at the site has moved into the factory. The carpenter's job is slowly becoming that of a mechanic, assembling components on the site. Factory-built components range all the way from door assemblies to complete house packages. Research currently under way suggests that by 1970 much of the work now being done on the site by electricians, plumbers, and painters will be done in fabricating plants.

New materials will appear in the homes built during the sixties. For example, low-cost plastics—principally, polyethylenes and polypropylenes—will take the place of metals for many uses. Conceivably, some houses will be assembled without nails, using instead airplane-type adhesives. These are only two of the less spectacular technological achievements that may take place in housing during the decade ahead, but they suggest the general nature of the potential "materials revolution."[1]

Changes in materials and building techniques, however, will probably continue to come about gradually, if for no other reason than the public—irrationally perhaps—tends to associate structural strength with weight and mass, and quality with cost. Hence, many of the materials now being developed may initially meet a reluctant and wary market. The experience of home manufacturers provides an example. Early prefabricated houses left a lot to be desired in many instances. Prefabrication came to be associated with low prices and inferior quality. The image, although presently inappropriate, has been slow to be destroyed. The benefits to consumers of technological developments that do occur, however, will be twofold: (1) savings in construction costs (that is, more house per dollar of expenditure), and (2) lower maintenance costs.

Changes also have taken place on the demand side of the housing market since 1950. For example, the "undoubling" of the war-induced "doubling-up" has been virtually accomplished. The number of married couples without their own household has been cut from 2.2 million in 1949 to 1.2 million in 1958. Annual reductions over the past five years have numbered in the low tens of thousands. Because of this, the

[1] For an excellent discussion of the technological revolution in housing, see Robert C. Turner, "Technological Horizons," *Business Horizons*, I (Spring, 1958), pp. 136 ff.

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number of new housing units that will be required to house the nation's population will depend to a greater extent on new marriages and the number of individuals who choose to maintain their own households.

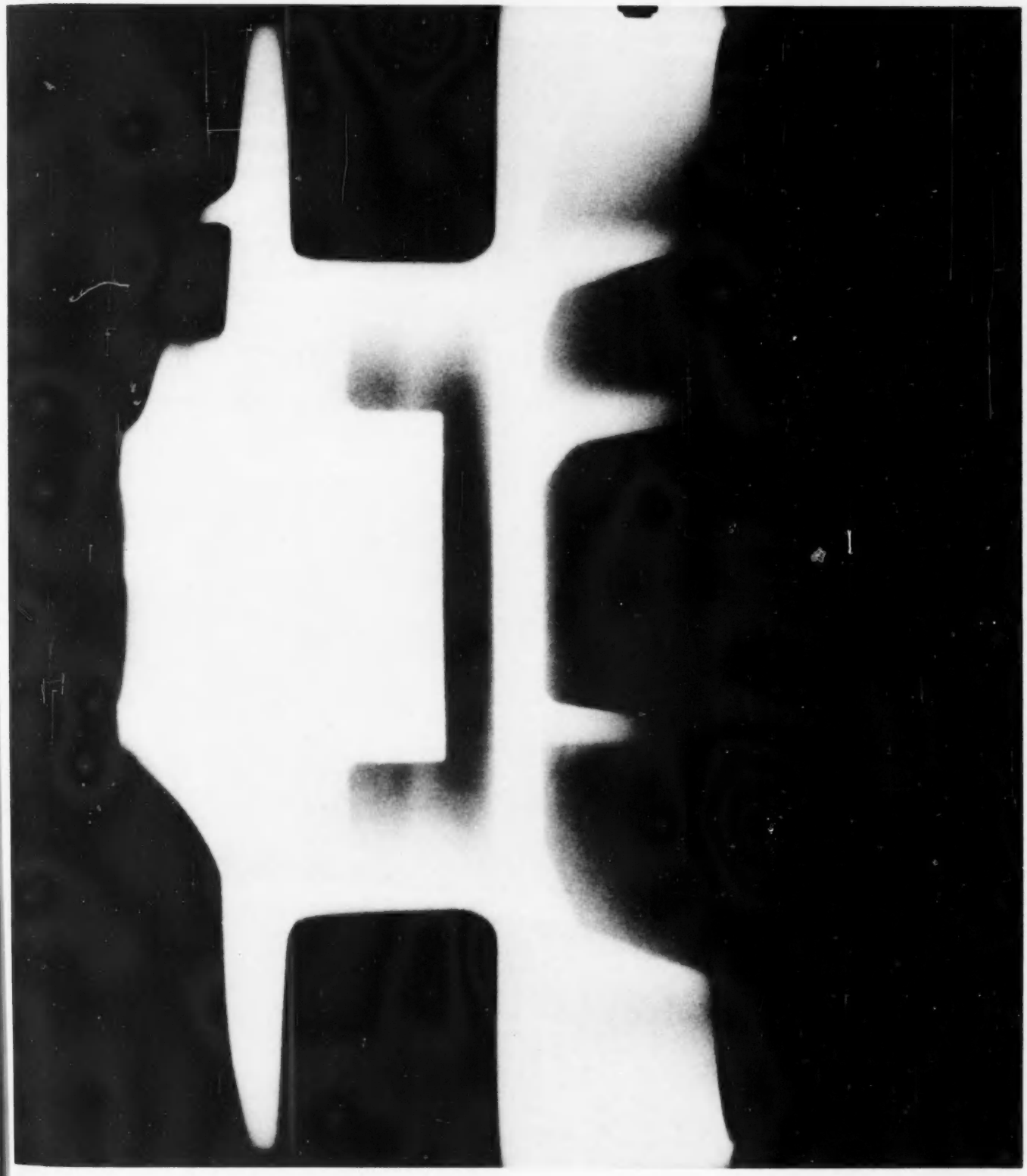
The number of nonfarm households will advance by 10.1 million during the decade ahead, if the Bureau of the Census' medium-high projections are realized. This projected increase is somewhat greater than that for total households because of a continued migration of a part of the farm population to the ever-expanding urban communities. Hence, a minimum of 10.1 million additional units should be added to the nation's housing stock to prevent involuntary doubling-up of the population. But this is only a starting point for estimating future housing starts.

An increasing volume of new housing units will be needed to replace losses. Expanded highway programs and other nonresidential projects will require the demolition of large numbers of presently occupied units. Some of these would be acceptable accommodations for several years to come; others will be a part of the 9 million units currently considered substandard. Many substandard and dilapidated units will be abandoned and destroyed; other units will be lost because of fires and other types of random disasters, adding further to the replacement demand. Regardless of the cause, units withdrawn from the present stock must be replaced by an equivalent number of new or converted units just to keep the supply of living accommodations from declining.

Further additions to the housing demand will be stimulated by an increasing number of families whose rising incomes and greater leisure will make it possible and desirable for them to own a second or "seasonal" home.

Vacancies will have to be increased to provide both buyers and renters a wider selection of accommodations and to facilitate moves from the city to the suburbs, from the suburbs to the city, and from one part of the country to another.

The American population is mobile. If recent trends continue, roughly 40 million persons will move into different living quarters in 1970; 8 million of these will find their new homes across county lines, but within the same state; 7 million will cross state lines in changing their residences; while 25 million will remain in the same county. Residential vacancies will develop in the areas exporting population, but pressures on the housing stock in the areas experiencing immigration will stimulate the demand for construction of new



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units. Prospective shifts in population suggest that the number of new housing units required in the southern and southwestern states will increase at somewhat higher rates than for the nation as a whole.

Not all of the increased requirements for housing will be fulfilled by the construction of new privately financed residential structures. A limited number of existing single-family houses will be divided into multifamily units; other types of buildings will be converted to residential use; and some families will live in trailers, houseboats, or other "nonhouse" accommodations.

The decade ahead should see between 13 and 14 million housing starts, or an annual average of 1,350,000 starts. Annual rates will vary considerably during the decade. Variations in the rates at which new households are expected to be formed suggest that housing starts may fall to annual rates of 1.2 million units during the early years of the decade and rise to 1.5 million late in the period.

Consumer tastes play a significant role in determining the dollar demand for housing. A study by the National Bureau of Economic Research showed that, during the six-decade period dating from 1890, real capital formation in residential real estate has declined in relation to growth in income, population, and the number of newly constructed housing units.[2] While many factors have contributed to the long-run decline, the National Bureau researchers indicated that housing very likely suffered a significant downgrading in the preference scale of consumers.

Data for the period following World War II suggest that the downtrend in consumer housing preferences has been reversed. Housing expenditures during the late forties and the fifties made up an increasing proportion of total consumer spending, rising from 9.4 per cent in 1947 to 12.4 per cent in 1957. If the trend continues, consumers will allocate 16 per cent of their total expenditures to housing by 1970. The trend of the figures supports Vance Packard's assertion in his 1959 best-seller, *The Status Seekers*, that the home shows signs of replacing the automobile as the

[2] Leo Grebler and others, *Capital Formation in Residential Real Estate: Trends and Prospects* (Princeton, N.J.: Princeton University Press, 1956).

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The dollar volume of residential construction expenditures will show substantially larger gains during the decade ahead than will the number of housing starts. The reason: Americans will demand "more house per house" and will spend more dollars per house.

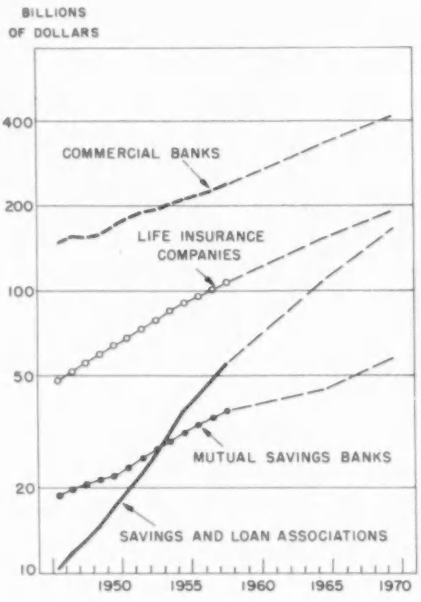
The new houses of the sixties will be larger, will have more and better equipment, and will be of better quality. The average construction cost per new unit built in 1970 will exceed $15,000 (1958 prices), compared with average costs of $12,000 in 1958, and $9,735 (1958 prices) in 1948.

Total residential construction expenditures, including those for alterations and additions, should increase roughly 50 per cent during the sixties and total approximately $30 billion (1958 prices) in 1970. The annual average should be roughly $25 billion (1958 prices) for the decade.

MORTGAGE FINANCING

If recent relationships continue, residential mortgage financing during the sixties, measured in terms of increased debt outstanding, will equal that of our entire history. Most of the demand for mortgage funds will emanate from the rising demand for housing services. But other motives not related to the construction, purchase, or improvement of a home will also induce consumers to pledge residential properties as security for borrowed funds. Some portion of the marginal proceeds from refinancing transactions and some, if not all, of the funds likely to be borrowed on debt-free homes will be, in effect, little more than long-term consumer credit; that is, the funds will be used for college educations, vacations and travel, and so forth. Some of the proceeds will represent a shift of equity from homes to investments in other types of assets.

FIGURE 1
Growth of Financial Institutions (Total Assets—Ratio Scale)



Despite the complexities of numerous forces and motives that influence the demand for funds, annual increases in residential mortgage debt outstanding during the post-World War II period have been closely related to annual residential construction expenditures. If recent relationships continue during the decade ahead, residential mortgage debt outstanding will total $225 billion in 1965 and $310 billion in 1970.

Percentagewise, the increase in debt outstanding during the decade will be substantially less than during the fifties. An increase to $310 billion of residential mortgage debt outstanding would represent a near doubling; the fifties saw an approximate trebling. In dollar terms, however, the magnitude of the financing requirements is reversed. Compared with the fifties, roughly 50 per cent more dollars will need to find their way into residential mortgages during the decade ahead.

SOURCES OF FUNDS

Who will supply the funds to meet the tremendous demand? Recent and current forces suggest that the sixties will see a continuation of the trend toward even greater institutionalization of the residential mortgage debt. The growth of assets in the four major types of financial intermediaries (commercial banks, life insurance companies, savings and loan associations, and mutual savings banks) combined has been closely correlated with the expansion of gross national product. If the post-World War II relationship of increases in the combined assets of these financial institutions to gross national product continues during the decade ahead, the combined assets of these four types of intermediaries should total approximately $830 billion by 1970.

Each major type of financial intermediary will experience significant growth in total assets. Savings and loan associations will probably grow at a somewhat higher rate than the combined assets of the four types of institutions; commercial banks will expand at a lower rate; and life insurance companies and mutual savings banks will continue to grow at only slightly lower rates than the combined total.

Figure 1 reflects the growth potential of the four major intermediaries and reveals probable differences in their rates of growth. The mortgage-lending capacity of these intermediaries should advance more than is indicated by the estimates of growth in their total assets. There is a good possibility that residential mortgages will constitute a somewhat larger proportion of their investment portfolios.

TABLE 1

Total Assets and Nonfarm Residential Mortgage Holdings of Major Financial Intermediaries

Type of Institution	Total Assets (billions of dollars) 1958	1970*	Residential Mortgages (billions of dollars) 1958	1970*	Mortgages as Percentage of Total Assets 1958	1970*
Savings and loan ass'ns	55.1	165.7	44.9	137.5	81.4	83.0
Life insurance companies	107.4	190.6	26.7	57.2	24.9	30.0
Commercial banks	240.1	414.4	18.6	37.3	7.7	9.0
Mutual savings banks	38.7	58.0	21.0	34.8	55.5	60.0

* Estimated.

TABLE 2

Residential Mortgage Debt Outstanding, 1950-1970

(billions of dollars)

Type of Lender	1950	1960*	1970*
Savings and loan ass'ns	13.4	56.1	137.5
Life insurance companies	11.1	31.8	57.2
Commercial banks	10.4	20.7	37.3
Mutual savings banks	7.1	21.5	34.8
Individuals and others	11.7	27.0	43.2
Total	**53.7**	**157.1**	**310.0**

* Estimated.

Table 1 shows the estimated total assets and mortgage holdings of the principal financial intermediaries for 1970. These estimates have been based primarily on the assumption that recent trends in rates of asset growth and mortgage portfolios will continue. If the estimates are reasonably accurate, the four major intermediaries will hold residential mortgages totaling $267 billion by 1970, compared with approximately $130 billion in 1960 and $42 billion in 1950. The remainder of the debt—$43 billion—will be held by a large variety of investors grouped for statistical purposes in a category popularly labeled "individuals and others." Table 2 shows the estimated mortgage holdings of the various types of lenders for 1950, 1960, and 1970.

Perhaps it should be pointed out that these estimates are not predictions; rather, they are suggestions of potential housing and financial requirements based on various assumptions. Perhaps the only irrefutable statement that can be made about the future is that uncertainty prevails. Hence, a willingness to accept and use projections carries with it an obligation to revise basic assumptions as the occurrence of events and the emergence of new forces render them inappropriate. Nevertheless, the assumptions upon which these estimates are based appear reasonable in the light of present evidence. Thus, the estimates should offer tentative approximations of housing and residential financing activity for the decade ahead.

SOME PROBLEMS

Realization of the estimates made here will not be easy. A variety of problems, some of which are already present and others which will arise during the decade, will need to be solved. Greater progress must be made in the areas of cost control and reductions. New materials and greater mechanization of home building offer the greatest possibilities in this respect. Further mechanization will require smoothing out difficulties with labor unions with respect to wage and job classifications and work standards.

Suitable building sites and community facilities, such as sewerage and water systems, streets, and schools, will have to be provided at costs that will not hamper the construction of homes the American public desires and needs.

Money may not be in the right places, in the right amounts, at the right times. Mortgage financing depends heavily on savings. It also tends to be largely local in character, primarily because of the peculiar characteristics of residential real estate. In the past, regional differences in the demand and available supply have been ironed out to some extent through the use of federally underwritten mortgages and through Federal Home Bank programs. These methods of transferring available funds in "surplus" mortgage money areas to areas where they are needed will probably not be adequate in the sixties. Some help in this respect could be gained through adoption of more uniform laws among the states with respect to foreclosure costs and procedures and to regulations of state-chartered financial institutions.

Finally, the various federal agencies will need to better coordinate their policies for improving the flow of funds into residential mortgages. If Americans are to get the homes they want and can afford, a favorable economic and political environment must be maintained.

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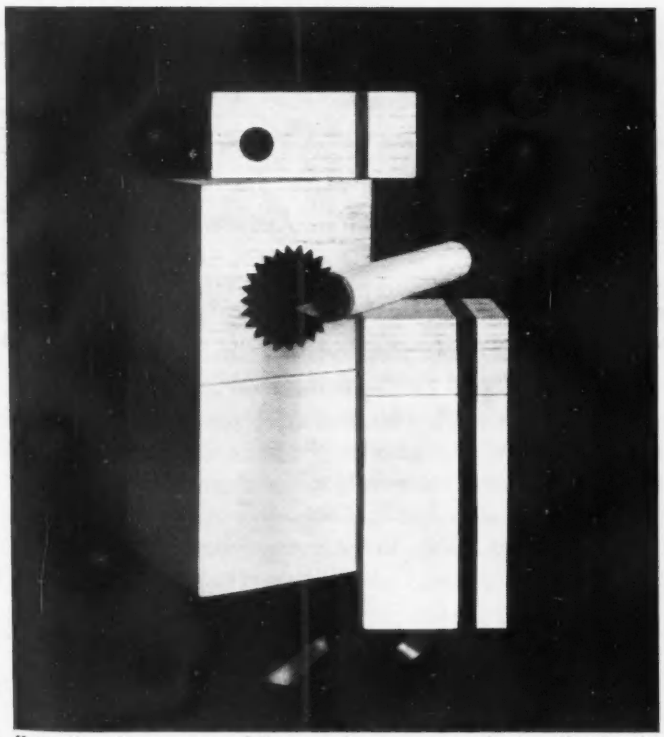

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Reader and Editor

THE FINANCIAL REPORT

To The Editors:

I read with considerable interest the article by L. Vann Seawell entitled, "Corporate Annual Reports—Financial Fantasy" [*Business Horizons*, Fall, 1959].

Of course, I agree that financial reporting can be improved, but I think we must recognize that there have been vast improvements since the New York Stock Exchange set forth its requirements for financial reporting in 1932 and since the advent of the Securities and Exchange Commission.

I am rather surprised that the article makes no reference to the annual study prepared by the American Institute of Certified Public Accountants entitled "Accounting Trends and Techniques." This is a most comprehensive study covering 600 companies and such matters as referred to in the article as the growing use of comparative statements and additional statements included in accounts presented by corporations to their stockholders. The study shows that many companies are including a great deal more information in their annual reports than they did ten years ago.

I am sure Mr. Seawell knows that the accounts and annual reports are those of the company and not of the certified public accountants. All the accountant can do is advise the client concerning the best form and presentation. In regard to treatment of items in the balance sheet and income account, the independent public accountant can recommend the best treatment. If the client does not accept the recommendations, the independent public accountant has the right, of course, to make such comment as he sees fit, and that is frequently done.

It has always been a rather remarkable thing to me that in the United States, the largest industrial country in the world, there are no requirements whatever in our states' companies acts for presentation of accounts to stockholders or for election of auditors. Our requirements for presentation of accounts to stockholders stem from the regulations of the New York Stock Exchange and the Securities and Exchange Commission. There are a vast number of companies which are not subject to these requirements.

In Britain and the British Commonwealth, on the other hand, there are very definite provisions for the presentation of accounts and the election

of auditors in their companies acts. There is a provision in these acts which safeguards the position of the auditor by requiring that, if the auditor is not going to be re-elected, the reason therefor must be stated in the proxy statement.

I am rather surprised by the statement that in some cases "auditors indicated that they had to 'give in' when the management of client corporations opposed a change to more desirable reporting practices suggested by the auditor." That is a serious reflection on the independence of C.P.A.'s. One of the most basic of the SEC's regulations is that the accountant must in fact be independent. If he indicated such a lack of independence, he would be subject to discipline by the SEC.

Some of Mr. Seawell's criticisms of the bulletins issued by the Accounting Procedures Committee of the Institute do not take recent developments into account. At its April council meeting, the Institute created a new Accounting Principles Board, which supersedes the former Accounting Procedures Committee. This board has been elected by the council on a broader basis than the former committee. The director of the board may issue studies, and the board may base bulletins on these studies. The report of the special committee that suggested creation of this board shows that it was very much alive to the criticisms of the bulletins which Mr. Seawell expressed in his article.

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CANADA AND FREE TRADE

TO THE EDITORS:

There are many in Canada who would agree with Mr. Wilson's criticism in his letter to the Editor, "Canadian Nationalism" [*Business Horizons*, Fall, 1959] concerning "Proposal for a North American Common Market" by William H. Peterson [*Business Horizons*, Summer, 1959] on practical grounds; namely that political merger of the U.S. and Canada would be a necessary supplement to a mutual free-trade agreement. However, Mr. Wilson's letter deserves further discussion.

Mr. Wilson has neglected to discuss those noneconomic values which he says have made the Canadian people willing to accept domestic economic inefficiency as the price for maintaining the country's national identity. If mutual free trade is as economically desirable for both Canada and the United States as it appears to be, and if it is agreed that this should be our goal, then reconciliation of the Canadians' noneconomic values with the advantages to be gained through economic integration is essential.

With care and patience, but not without adjustments and compromises, some of these values can be preserved when the political merger of the two countries is realized. Other values, however, are less capable of preservation; these are chiefly in the nature of pride and sentiment. The values of pride and sentiment are so wide in scope and so complex that a discussion of their complete intricacies is impossible in this context. Moreover, any attempt at intelligent discussion of the merits of these values (at least in Canada), is unlikely to prove fruitful because of built-in prejudice and the lack of objectivity among Canadians when discussing such emotionally charged subjects. Nonetheless, it is these very values of pride and sentiment and their many ramifications which have created the differences between the "American" and "Canadian" ways of life, ways which are otherwise identical. I am of the opinion that these values would not have developed to their presently advanced stage without the embarrassingly intense government- and newspaper-incited nationalism, which has reduced the average Canadian to an irrational believer in these values and has contributed to Canadian distrust and suspicion, if not envy, of the United States.

In reply to Mr. Wilson's statement that ". . . mutual free trade cannot come about until Canada achieves a size and diversification of industry comparable to that of the United States," I would say that Mr. Wilson has an unrestrained optimism for his country's economic growth, but that he shows no recognition of the limitations to such an achievement: (1) Canada's small-scale, high-cost, inefficient economy, dependent for its existence on the export market and protected mostly by trade barriers; (2) Canada's lack of self-owned capital—hence the foreign ownership of most of the economy; and (3) the very real geographic limits to the growth of the Canadian population.

Mr. Peterson has erred in discussing mutual free trade without also discussing the political implications of such a proposal. Mr. Wilson, however, by neglecting to expand on his mention of Canadian noneconomic values, has given no flexibility to his viewpoint and, further, has attempted no solutions to the economic dilemma facing his country and the economic hardship which its people must suffer to preserve a national identity.

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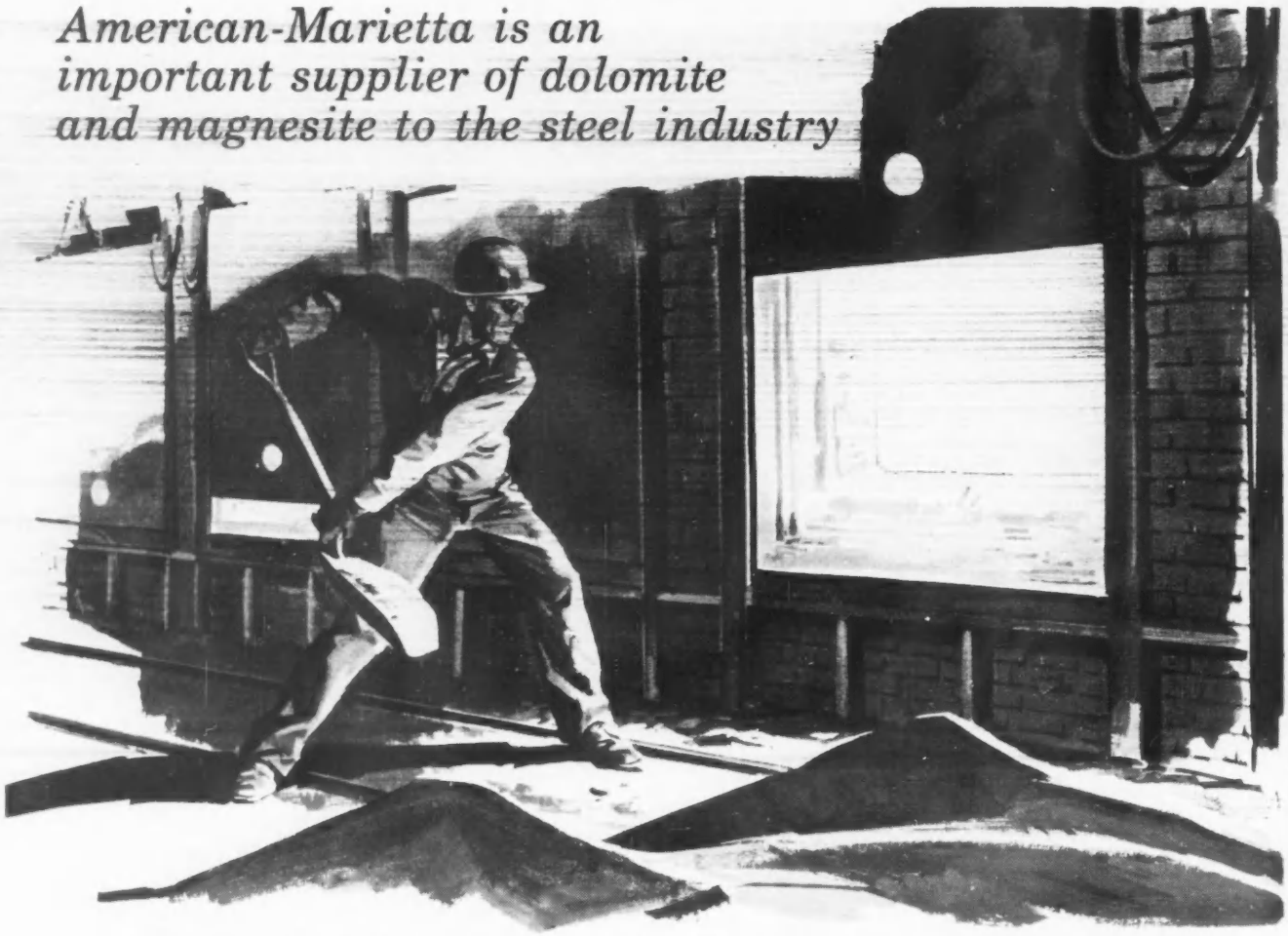

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BUSINESS HORIZONS

The *Human Side* of Automation

WALTER BUCKINGHAM

SCIENCE AND technology seem destined to be among the primary determinants of the events of the second half of the twentieth century. Science is knowledge, systematized and formulated to discover general truths. Technology is science applied to the industrial arts. Science is concerned with understanding; technology is concerned with practical uses, and one of the most significant technological developments in history is automation. Its countless uses in industry promise undreamed-of benefits, but in its total impact lurk some hidden dangers. As an old saying puts it, one cannot bask in the morning sun of a new day without leaving a shadow behind.

Automation is more than a technology. It is a philosophy of manufacturing, requiring that the entire productive process, from raw material to final product, be analyzed so that every operation contributes most efficiently to the achievement of the goals of the enterprise. Automation is an outgrowth of a three-stage process of technological development that is over two hundred years old. The first stage was mechanization, a technology based on forms and applications of power. The second stage was mass production, a technology based on principles of production organization. The third is automation, a technology based on communication and control. With

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the advent of automation, the function of industry has become, in the words of Dr. Vannevar Bush, "the planned application of scientific results in an economic manner for the increase of man's physical wellbeing."[1]

REASONS FOR AUTOMATING

Sometimes a firm goes in for automation like a young man getting married. He knows he can't justify the step on economic grounds, but he just can't resist the temptation. Some ventures into automation are probably traceable to executive egos, public relations sensitivity, or engineers' relish for new heights of mechanical complexity. The glamour attached to having the fanciest plants or the most intricate machinery has, no doubt, led to some enormous expenditures that may well go down in history to what Veblen would have called "conspicuous investment."

The ultimate test of business success is profit, however, and probably most automation has an underlying economic motivation. First, automation can perform many tasks that cannot be accomplished without it. For example, only electronic computers can make the millions of calculations needed for guiding a rocket; humans could never do the staggering amount of arithmetic in time for the results to be useful. Work never before possible can be done with automation.

Because of their speed of operation, for example, automatic transfer machines, electronic computers, and other automation equipment can perform some tasks that would otherwise be impossible, no matter how much power was used or how well the work was organized and managed. Manipulating an atomic pile or controlling rapid chemical reactions could not be done without automation. Some new products, like polyethylene, a soft but strong plastic used for making thousands of items today, could not have been produced without automation. Nor would color television be possible, since no human being could ever put the hundreds of thousands of colored dots in their right places in the tubes without automatic control machinery. Automatic sensing devices can operate under conditions deadly to man—in intense heat, in bitter cold, in poisonous gases, in areas of atomic radiation.

A second reason for using automatic machinery is to save labor costs on jobs that are already being performed without automation. Utility and insurance company officials report that each electronic computer can now replace 170 to 200 persons. The Ford Motor Company has indicated that automation has reduced labor costs by 25 per cent. Needless to say, the impact on both management and labor from such technological improvements is enormous.

EFFECTS ON COMMERCE

A few years ago, management and administrative staff comprised only a small part of total labor costs; today, in a typical large enterprise, they receive half of the wage bill. A major problem facing management and the nation is the rising tide of red tape. Due to a mushrooming of business and government bureaucracy, there has been an alarming growth of paper work in recent years; the present volume of office activity is astronomical. Thirteen billion checks worth $2¼ trillion were written in the United States in 1958, and the American Bankers Association expects this to grow to 20 billion checks by 1963.

Automation promises to reverse this trend. The greatest nonmanufacturing potentiality for automation is in the communication, storage, and manipulation of information. Automation of check-handling is now facilitated in many of the larger banks by magnetic ink imprinted on checks and read by automatic sorting machines. One of these machines can sort 750 checks per minute, saving from 25 to

[1] *Automation and Technological Change*, Hearings before Subcommittee to Economic Stabilization, Pursuant to sec. 5 (a) of Public law 304, 79th Cong.; 84th Cong., 1st sess., Oct. 14-28, 1955 (Washington: U.S. Gov't Printing Office, 1956), p. 615.

40 per cent of the bookkeeping department's time. Automation is capable of radically altering both the productive and administrative processes of the business firm, and the best proof of this is found in the offices where the need is greatest.

Office automation has two main effects. First, it takes over some existing clerical jobs and, second, it performs new tasks not feasible by manual methods or with more primitive machines. When first installed, computers usually perform only routine functions such as work scheduling, inventory control, billing, payrolls, and cost accounting. But electronic computers and related equipment have applications far beyond office routines. They are able to integrate either a conventional or an automatic factory operation with the office system that controls it. Although there is a considerable amount of automation in factory production, there is much more in office work. An integration of the two would seem to be the next logical step. When this occurs, there are bound to be far-reaching effects on top management itself. The more spectacular uses, such as providing all kinds of special reports and long-range planning, will, of course, have to develop through experience. Only then will the computer really become a fundamental management tool.

In both theory and practice, automatic data-processing by electronic computers has many commercial uses. The most promising are inventory record-keeping, billing, and payroll bookkeeping. In a large number of instances, machines now in use can perform their tasks for less than the present clerical cost. For example, computers that will keep track of several thousand items of inventory can be acquired at a cost of about $20,000 a year, which is less than the clerical salaries saved exclusive of overhead. It is already common in large firms for centrally located computers to receive, by the close of the day and via telegraph, output figures from each department or daily sales data from far-flung branches. When the manager gets to work the next morning, a complete summary of the previous day's operations is on his desk.

This new, timely information permits "management by exception." This means that normal performance standards concerning such problems as labor costs of each product or operation, materials costs, sales quotas, and so on, are set for all clerical, sales, and operative personnel. The electronic computer automatically processes all data and information from these departments, and the results are then compared with the established standards. Management need be concerned only with those instances where the standards are not being met. This is one way in which automation can take over the huge burden of routine administration and leave executives free to do what they are supposed to do—make decisions involving judgment, something a machine can never do.

Lethargy, traditional thinking, and lack of information are usually more important deterrents to installation of automation than technological or economic barriers. To help firms avert these problems, private, cooperative, or state computer centers and other automation service organizations have been established. These newly formed organizations are not bound by company tradition or limited by individuals in a firm's management who might otherwise deter change or progress. They can specialize in automatic data-processing, and can attract expert staffs and make them available to clients without committing these clients to heavy initial outlays or long-run expenses. Because of the important functions that these firms perform, they should continue to expand rapidly.

EFFECTS ON MANAGEMENT

Machines Work Better

There are several appealing features of automation that should ease management tensions. First, automatic machines can frequently work better, faster, and more safely than people and can do many things people cannot do. As previously mentioned, they can operate under

conditions that preclude human endeavor. They do not experience fatigue or monotony and are frequently more dependable than humans, making fewer mistakes, never forgetting, and requiring no retraining. In other words, technological advancement can often be liberated from the limitations of human labor and control, enabling the management and labor of industry to accomplish much more. On the other hand, although computers can make simple decisions between two clear-cut alternatives, they cannot exercise the kind of judgment that is inherent in management functions. Automation can be an aid to, but never a substitute for, managerial responsibility.

Machines Aid Control

A second effect of automation on management arises from the continuous nature of production. If used intelligently, automation definitely can increase the effectiveness of managerial control. It can reduce the number of clerical staff members and the physical volume of paper. This alone facilitates control. Electronic computers can also permit more rapid and efficient disposition of the irreducible minimum of office work necessary for controlling a large and complex industrial, commercial, or governmental operation. The speed and accuracy with which information can be processed increase both the span and intensity of control.

While requiring greater control, automation also permits greater control. Electronic computers increase the amount of knowledge, the accuracy of information, and the speed with which it is obtainable—thus giving management a much clearer picture of over-all operations. Knowledge of the consequences of alternative courses of action becomes readily available, and business operations in the future can be conducted more rationally. Unprofitable product operations can be more quickly discovered and eliminated; credit managers will be able to follow the changes in financial ratios day by day. Collective bargaining and product-pricing can be based on more accurate information, so that areas of controversy will be narrowed and conflicts based on misunderstandings of facts will decline.

Business in all its phases is rapidly becoming more complex, and managers can expect to have much more difficulty keeping control over everything. The quality of management must change in degree *and* in kind. Even though a large portion of their former burden will be taken away because of the use of self-regulating automatic equipment, a much higher level of technical proficiency will be required of all management people.

Machines Demand New Skills

A third effect of automation follows directly from the second. Lower-level supervisors will need to develop new skills in handling subordinates who are highly trained technically and perhaps highly strung emotionally. As more expensive equipment is entrusted to them and their responsibility is augmented, supervisors will also need a deeper knowledge and appreciation of technical productive processes. For example, rapid change-over times and greatly decreased inventories require that supervisors have more technical knowledge than ever before.

These supervisors also need to pay more attention to nontechnical matters such as the worker's feelings and group relationships. The supervisor must recognize that it is irrational to expect workers always to act rationally. Many "old-time" foremen still think of productivity as the direct result of physical activity, as it was in the nineteenth-century sweat shops. These old-timers do not understand how men can be standing around talking or listening to music while automatic equipment roars out production. Yet this kind of situation is often essential to the highest productivity in automated factories. The pressure on the seemingly relaxed and idle machine-tenders may be greater than ever. Their responsibilities and accompanying anxieties have increased although their physical activity has declined.

Furthermore, whereas the workers in many old-style factories were dirty while the supervisors were clean, automation frequently erases this distinction. Nonmonetary symbols of status and position, such as cleanliness, dress, working conditions, and privileges are often more important than money for job satisfaction and incentives. If physical appearance does not permit the casual visitor to differentiate labor and management or different levels of personnel within labor and management, then new symbols of status will have to be devised to maintain organization, dignity, and adequate incentives.

Some companies have experienced a considerable broadening of the span of control as a result of automating their plants. However, a fairly serious shortage of capable shop foremen and other supervisors remains. "Job enlargement," a reversal of the long trend toward specialization, seems to be indicated for many management as well as labor functions.

Machines Require Broader Knowledge

A fourth effect of automation, and a corollary of the third, is that it accelerates the need for broader knowledge in higher levels of management. Two factors have continued to retard the evaluation of business organization and management required by automation—tradition and the unending search for pat answers or easy solutions to complex problems. Management structure has too often developed separately from technology in manufacturing, and, as one vice-president in charge of manufacturing put it, "there is a heavy brick wall between the two." Automation puts a high premium on ability to adjust, and big enterprises have their share of people at all levels who resist change. The prime requisite of a successful executive or manager is the ability to adjust to new conditions quickly. In fact, management should be the first to recognize and accept necessary changes. Unfortunately, under conditions of rapid change, some management people may be so absorbed with the impact of the change on themselves that they readily believe they do not have time to practice principles of economics and human relations. It may be difficult for some executives to keep in mind their real function. It is easy to confuse the means with the end, to become obsessed with the methods themselves.

Conservatism was once the basis of sound management philosophy, and firms could expect continuous growth or at least a comfortable existence using tradition, experience, and guesswork as guides. These tools are now greatly outmoded. Over half a century ago, the United States Electric Light Company exiled its guiding spirit, Hiram Maxim, to England on a $20,000 annual life pension because his free-thinking mind was producing inventions at such a rate that equipment was being rendered obsolete before it was paid for. In England, Maxim made some of his greatest inventions, and while he was being knighted for his great accomplishments, the firm that banished him was going out of business.

Today no responsible business executive would think of doing such a thing as this; yet some managements are still not prepared, either in education or attitudes, for the age of automation. They sometimes are unaware of the importance of their position, authority, and responsibility.

Automation creates a steady, endless flow of data that in itself tends to break down departmental and divisional lines and hence, in receptive minds at least, to broaden management thinking and destroy some intellectual provincialism. Today the firm without an alert, eager, research-conscious, and farsighted management is courting disaster. Yet some managements still seek monopolies, tariffs, and other special protections to avoid facing the future with courage and imagination. Although generally there has been a great awakening among managements in recent years, there is still a need for thawing some frozen attitudes.

Machines Alter Basic Philosophies

Fifth, automation affects the philosophy and therefore the organization of business systems. In the past, many factories were little more

than haphazard accumulations of machines. Automation, however, tends to make the entire factory into a single supermachine. Furthermore, office operations (which are frequently the largest part of an enterprise) have to be integrated within the factory in much the same way as the parts of a single machine are related to each other. The principles of machinery become applicable to the whole business enterprise, and everyone—the company's president, machine operators, and outside salesmen—becomes an integral part of the machine.

With the development of automation in an individual plant, a complete re-evaluation of management functions is frequently necessary to keep a plant operating at top capacity. Often the greatest economies of automation can be attained only if the system of organization and procedure is changed to fit the capabilities of the equipment. Thus, machinery should not necessarily be designed to perform tasks already being done, but the whole body of tasks may have to be altered to make the best use of the machines.

Staff management and staff organizational needs will undoubtedly increase considerably. It may become necessary to change from the traditional line-and-staff organization to a functional organization. As productive processes and factory layouts are changed, the problem of determining managerial responsibility changes. Functions that were once discontinuous and specialized are frequently tied together in a continuous flow process. In other cases, the improved communications system has made responsibility easier to define and "passing the buck" more difficult for department heads. The specialists needed for automated plants will require more direct control over their operations. Production planning and control will be simplified to the extent that "flow" control and continuous processing replace the intermittent or "batch" type of manufacturing. However, there will probably be a need for tighter control and the instant dispatching of repair crews when trouble develops in the automation process.

Automation elevates long-range planning, co-ordination, and control to major importance and emphasizes the need for management to think less in terms of individuals and particular problems and more in terms of groups and over-all requirements. In his recent pioneering investigation of thirteen automated plants, Professor Bright found that "the outstanding conclusion of this study is that automation puts a great premium on managerial planning."[2] There must be long-range planning for product development, materials procurement, manufacturing, and marketing. The automated plant is highly integrated throughout. This integration, plus the need for continuous operation already explained, greatly increases the vulnerability of the plant to breakdowns and other interruptions. Preventive maintenance becomes necessary, and administrative breakdowns become as costly as mechanical ones. Relations with labor, suppliers, and customers take on added significance.

Where management has failed to fully understand automation and predict its impact, the results have been costly. John Diebold claims businessmen have done very little hard thinking about what automation can do for them, although they have been fascinated by the equipment itself. Diebold says that they have spent millions of dollars for new, automatic equipment that is doing no more than the old equipment was doing more easily and economically. He tells of a body frame manufacturing firm that wanted to automate its assembly line. It purchased equipment from different suppliers without proper co-ordination. The machines didn't work properly, so manual operations had to be set up parallel to the automated ones. Ultimately, the entire facility was shut down with a resulting loss of $10 million.[3]

In another case, a utility company spent

[2] James R. Bright, *Automation and Management* (Cambridge, Mass.: Harvard University Press, 1958), p. 12.

[3] John Diebold, *Automation: Its Impact on Business and Labor* (Pamphlet No. 106; Washington: National Planning Ass'n, 1959), p. 4.

four years preparing for a computer that was expected to do a certain job in twenty hours. When the equipment was installed, the job took sixty hours and the machine had to be returned. These fiascos result, says Diebold, because most management thinking about automation "has already become rigid and cluttered with stereotypes that stand in the way of real progress." In fact, Diebold claims that automation's impact is in some cases the opposite of what management expected.

Furthermore, management has not only been fascinated but intimidated by the extreme complexity of the machinery. It has allowed technicians to take over the whole operation of the machines as well as the management decisions as to how they are to be used. "Electronics committees" have been appointed that do little more than give the impression that something is being done. Businessmen overestimate the specialized knowledge of engineers and regard it with awe, while engineers frequently underestimate the complexity of business operations and consider them something to be mastered in a few months. Yet, as Glenn White of the Chrysler Corporation says, "Somebody who has a good knowledge of how to run your business . . . can be trained in electronics much easier than somebody who knows electronics can be trained in how to run your business." Perhaps this was best summed up by a recent *New Yorker* cartoon, which depicted a wife saying to her dignified but worried husband, "I can't understand why you keep fretting, John. Automation or no automation, there will always be a Chairman of the Board."

EFFECTS ON LABOR

When Frederick Taylor led his crusade for "scientific management" in 1895, he proclaimed the primacy of piecework, asserting that the business enterprise and everything in it (including human minds and behavior), could be broken down into tiny bits and pieces and analyzed in the same fashion that chemists analyze an unknown substance. Following Adam Smith's theory of specialization and the division of labor, Taylor extended his "scientific" analysis from production to every other aspect of business. He sought to reduce work to its simplest elements in order to rationalize these elements and thereby increase workers' output. For example, he made a careful time-and-motion study of every movement involved in the job of handling pig iron. By theoretical analysis, Taylor devised a more efficient method and taught this method to a workman named Schmidt who was soon able to handle 47 tons of pig iron a day as opposed to 12½ tons previously. Furthermore, says Taylor, Schmidt was "glad to do it."

Implicit in Taylor's theory, however, was the assumption that men could be studied and treated like machines. Taylor realized that this mechanical regime would have some kind of impact on workers. Consequently, he suggested that the worker most likely to succeed would need to be stupid, phlegmatic, and resemble an ox.

Fortunately, workers refused to submit completely to machines and let the logic of efficiency take away all their judgment. Unfortunately, workers all too often had to express their revolt against machinery and rationalization by using their individuality and ingenuity to outwit the industrial engineer rather than by cooperating with management to their mutual advantage.

Improved Working Conditions

In contrast to mechanization, automation seems to improve working conditions in several ways. First, there is nearly always greater safety because of mechanized materials-handling, elimination of the most hazardous jobs, and reduction of the number of people in direct production areas through the use of remote controls. Hernia, eye troubles, and foot accidents have virtually disappeared in the Ford Motor Company's automated Cleveland engine plant. In one major automotive stamping plant, scrap steel formerly was collected at

individual scrap collection areas where it was baled and moved on open conveyors to the central collection area. Workmen were exposed to physical dangers, and there were frequent injuries. Automatic equipment now loads the scrap into balers, and closed conveyors move it to the collection area where it is automatically loaded. The whole process is monitored by television.

In the pottery industry, silica dust has long been a hazard. Closed silos and automatic conveyors now handle all dust-producing materials. In the chemical and petroleum-refining industries, potential toxic exposures were always a great risk. Automation has reduced this risk but has added a less likely although more dangerous risk—a rupture in the lines could lead to a single, catastrophic exposure. In one plant, several operations were combined in one location by automation, and a serious fire occurred two weeks after the change-over. While automation may practically eliminate many types of accidents and industrial diseases, the risk of isolated but disastrous accidents still exists and, in a few rare instances, the dangers are actually increased.

Increased Emotional Hazards

The decline of physical risks through automation could be partially offset by greater emotional hazards.The highest incidence of gastric ulcers in the hourly paid group is now among skilled machinists who exert less physical effort than most workers. Ulcers, although physical in results, are caused primarily by mental or emotional stress. It has also been estimated that 20 per cent of all employees in peacetime are borderline emotional cases. A recent study of heart diseases revealed that unskilled laborers are among the least likely to have heart attacks of all occupational groups, while among those most susceptible are people working with computing machines.

Automation may increase workers' feelings of security because the continuous nature of automatic processes permits greater regularity of employment and, therefore, increased job security. On the other hand, this advantage can be partially offset if regularity of employment means regularity of nightwork, or if automation causes boredom or leads to a more rigorous industrial discipline from machines. Automation may reduce the interaction among workers both by reducing their numbers and increasing the distances between their work places. A study of workers' attitudes toward automation by Professor W. A. Faunce of Michigan State University showed that the main complaints of 125 workers were increased noise, need for closer attention to work, and most important, loneliness caused by being isolated from other workers.[4] At least one British union has already asked for "lonesome pay."

Related to lonesomeness is boredom. This is not peculiar to automation, of course. It is perhaps more typical of old-style conventional mechanization than of automation, but some operative jobs under automation may still be highly routine and boring. These jobs are usually the most likely to be mechanized or automated, however, since they are based on simple, repetitive tasks. In Coca-Cola bottling plants, the old method of inspection was to put four bottles of the finished product in front of a strong light and have an inspector watch for any foreign matter in the drink. Then someone initiated a conveyor system in which the bottles ran continuously. This was a much faster process, but the job was so boring that every now and then a 7-Up had to be run through to see if the operator was alert.

The Skills Required

Automation may have improved working conditions generally but, contrary to popular opinion, it does not seem to have upgraded workers very much. A recent survey of a cross section of metal-working firms that had recently automated revealed that 43 per cent of

[4] William A. Faunce, "Automation in the Automobile Industry: Some Consequences for In-Plant Social Structure," *American Sociological Review, XXIII* (August, 1958), 401-7.

the firms believed the new machinery required less skill than the old equipment, 30 per cent reported no change in skill requirements, and only 27 per cent felt that higher skills were required.[5]

Professors Mann and Williams of the University of Michigan studied a plant that, prior to automation, had 450 employees performing 140 different tasks in its central accounting area. They estimated that 50 per cent of the tasks were eliminated by automation and 30 per cent more were substantially changed. Ninety per cent of the workers were directly affected. But with all this dislocation, there was no significant upgrading in skills required. Before automation, the classification range of jobs had been from 3 to 13, with an average job grade of 8.0. After automation, the average rose almost imperceptibly to between 8.1 and 8.2. Even some of the highest-grade and supervisory tasks were programmed for the computer.[6]

Several studies indicate that automation does not even increase the maintenance force significantly except during the "debugging" period and for electrical maintenance. Newly automated plants frequently hire inexperienced workers and give them only limited training. Some case studies show that former machine operators tend, after automation, to become only machine monitors. They rarely have to actually *do* anything, but they must be constantly alert. Other evidence points to job enlargement, but this is often in the form of a requirement that the operator be responsible for more complicated machinery or for a greater variety of machinery.

Even operating a variety of machines need not require greater skill. A study of a large utility company in the United States revealed some job enlargement from automation as do some other single-plant studies, but a mere requirement of familiarity with more different kinds of equipment is not the same as upgrading. Nor do more complicated machines necessarily require more complicated skills to tend them.

A large aircraft manufacturer made a theoretical job analysis to determine the abilities required of operators of its electronic computing equipment. The study indicated a paradoxical combination of high technical competence and low mental capacity—the employee should have a B.S. degree in engineering and an I.Q. of 81! As Professor Killingsworth of Michigan State points out, "Merely pushing buttons and watching for warning lights is unlikely to hold intrinsic interest and challenge for very long."[7]

Technological Unemployment

If automation is to benefit labor, it will have to be largely through its effect on the national economy and not through its impact on the plant. Physical working conditions are undoubtedly improved, but there is no other definitely established benefit to workers. Labor requirements in direct production jobs have been substantially reduced, although there have been few layoffs that can be directly attributed to automation. Permanent reductions in the work force due to technological changes are apparently sometimes postponed until a general economic downturn permits layoffs to be blamed on national or international conditions. Then when recovery occurs, fewer are recalled than were laid off. This is part of the explanation why unemployment has remained so high since the 1957-58 recession. For example, there are about 160,000 unemployed in Detroit who will probably never go back to making automobiles, partly because the industry is past its peak of growth and partly because automation has taken their jobs. Steel-

[5] *American Machinist* (October, 1957).

[6] Floyd C. Mann and Lawrence K. Williams, "Organizational Impact of White Collar Automation," a paper presented to the Industrial Relations Research Association, Chicago, December 28, 1958.

[7] Charles C. Killingsworth, "Automation in Manufacturing," a paper presented to the Industrial Relations Research Association, Chicago, December 28, 1958.

workers returning after the recession found the same work being done by 20 per cent fewer men. Possibly half of the nation's 400,000 soft coal miners may have to leave the industry for good.

Some large employers have admitted publicly that they timed layoffs to coincide with periods of recession when general business conditions could be blamed, even though increased efficiency from automation was the underlying cause of employee reductions. When the upturn came in late 1958 and early 1959, they anticipated further investment in automation and were therefore cautious about rehiring. A top business executive recently said, "I'd rather have our employees work a longer week and pay overtime than add one more man than necessary to the payroll. . . . It's cheaper to pay the extra expense of overtime than to pay the extra expense of a public relations drive to explain a layoff."

The employee most directly affected by this type of technological unemployment is not the one who is fired but the one who is never hired in the first place. As job opportunities have declined in manufacturing, there have been many new openings in the service industries, but the continuation of these opportunities is due more to forces determining national economic growth than to developments within the firm such as automation.

For the most part, over-all economic growth will probably have to provide the economic environment in which new entrants to the work force and the other victims of "silent firing" (such as job transfers) will be able to find opportunities for employment. The obvious and highly publicized advantages of automation for management should not be allowed to overshadow the plight of the little man searching for a place in a growing economy.

THERE is no person, let him be ever so wise, that can perfectly accommodate himself to all changes; for one man cannot well tell how to act contrary to what, perhaps, he is powerfully inclined by nature; and another cannot easily persuade himself to quit a course of life in which he has always succeeded before. So that when it is necessary to proceed with vigour and expedition, a cool and deliberate man, not knowing how to act the part, is generally undone: whereas if he would alter his conduct, according to the times, he would have no reason to complain that Fortune had deserted him.

—*Niccolo Machiavelli*
THE PRINCE

H. D. Maloney

Four Economic Revolutions: 1940-1960

Historians tell us that significant changes in human affairs are often unnoticed by those involved in the changes. Few in England or America in the late eighteenth century anticipated the tremendous impetus that would soon be given to plantation agriculture, the slave system, and the British textile industry by the invention of the cotton gin and the further improvement of steam-driven spinning and weaving machinery. Adam Smith, the most knowledgeable observer of economic tendencies in his century, had much to say of the division of labor and the advantages of large-scale production in his *Wealth of Nations*, but even he had little foresight into the astounding developments in these areas that occurred only a few decades after 1776.

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We in the mid-twentieth century differ from our ancestors in this penchant for searching out and labeling revolutions in political and economic life. Aside from pure science, the arts, and politics in the narrow sense, both scholarly and journalistic efforts offer for our inspection such varied revolutions as industrial automation, the growth of trade-union power, improvements in agricultural technology, the homogenizing influence of mass communications on consumer tastes and attitudes, and the surge in industrial product development. Today's businessman seems enormously impressed by the increased importance of government and organized labor in the economy; farm spokesmen are alarmed and vocal about the shrinking position of agriculture; and for many trade-union leaders, the crucial developments of our age are the diminishing relative importance of the manufacturing labor force

and the continued successes of automation. Unlike our predecessors in the eighteenth century, we seem to have too many revolutions to contemplate and understand.

Genuine revolutions, those that effect fundamental and irreversible alterations in the socioeconomic environment within a relatively short period of time, are often not easy to identify until they have accomplished most of their work. The American economy between 1940 and 1960 offers rich material for the intensive analysis and interpretation of such changes. It also offers fascinating possibilities for speculative projection.

But neither of these interesting pursuits defines the present purpose, which is primarily to identify and briefly describe a few of the more obviously important mid-century changes in our economic life that might qualify as accomplished revolutions. These changes have either grown directly out of or have been enormously accelerated by the events of the past twenty years. Because they have appeared in rather clear outline in a short time span and have brought about what seem to be basic and permanent alterations in the economy, we shall follow current fashion and refer to them as revolutions. They have not been chosen at random. They occurred in a common environment and their interactions were intimate. Together, they were the substance of much of our recent past.

THE INCOME REVOLUTION

The candid observer of American economic life in the past two decades would find it rather difficult to bypass the fact that the real income of the American people, both in the aggregate and on a per capita basis, took a striking upward lunge after 1940. This sudden change in our economic fortunes, in such strong contrast to the bleak and stagnant early and middle years of the depression decade, lifted us to a new and different plateau. Those who can recall the details of public and private life in prewar America are, in this sense, dwellers in two worlds. Those who have strong memories of only the past fifteen years or so are apt to take the myopic view that our recent opulence is a normal and necessary feature of American life. A glance at our changing experience as income producers and earners therefore serves as a useful device to gain perspective on our present position.

Income and Wealth

Before we summarize our picture of the income revolution, it is helpful to note that we should perhaps call it the income-and-wealth revolution. Our stock of real wealth in the form of houses, schools, industrial plants and equipment, roads and highways, public buildings, parks, transportation facilities, and even our automobiles and household durables is simply the part of past production that we have not consumed. It is the part of our past real incomes that we have saved and invested. The substantial recent additions to our fabulous collection of public and private assets are by-products of the income revolution. Without high levels of production and real income, large-scale accumulation of real wealth is difficult or impossible. On the other hand, wealth in the form of capital goods facilitates further production and income growth. This most interesting and important circular connection explains incidentally why poor societies find it so very difficult to become better off, whereas rich societies can easily become richer.

When we speak of the income revolution, we ordinarily mean the recent rise in our ability as consumers to acquire goods and services —in other words, the improvement in our real incomes and not simply our money earnings. As we all know, the price level is considerably higher than it was twenty years ago, and comparisons designed to show personal income growth must take this into account. Further, during the past two decades, the personal income tax has taken a substantial bite out of our money incomes. The important question then seems to be, "What is our income position after proper adjustment is made for the inflation and the larger tax take?" But this still does not give the complete question, because it ignores

population growth. It is clear that our income comparisons must be on a per capita basis. In short, we want to inspect the change in our personal incomes after taxes, expressed in dollars of constant purchasing power and on a per capita basis.[1]

Income Statistics

Fortunately, the figures that provide what we want are readily available in our national income statistics. First, we should glance at the unadjusted money figures themselves. In 1940, total disposable after-tax personal income was $76.1 billion; in 1958, it was $316.5 billion. On a per capita basis, the corresponding figures were $576 and $1,818—a remarkable increase indeed. But by adjusting the 1940 data to 1958 prices, the former year's total comes to $156.9 billion compared with the $316.5 billion in 1958. The per capita figures, corrected in the same way, come to $1,188 in 1940 and $1,818 in 1958. This latter pair of figures is what we are really after. The $630 increase in real disposable income per capita, approximately a 53 per cent increase, means that the average American enjoys a real income more than half again as large as he did two decades ago. It should be emphasized that our dollar figures are per capita and not family income figures, which would of course be several times larger. These comparisons provide a highly simplified, but nevertheless generally accurate, idea of our one-generation income experience.

However, we should by all means remember that not all that is important in the real income flow comes to us through the department store, the supermarket, or the service station. An extremely important part of our real income consists of public services that we purchase and consume collectively. On a per capita basis, many of these are not much larger than they were before World War II, but they could be vastly larger if the demands of defense expenditure were not omnipresent. In any case, American consumers were rich enough in 1958 to spend $6.4 billion for tobacco products, $1.9 billion for jewelry and watches, and more than $7 billion for toys, boats, sport supplies, radio and television receivers, records, garden equipment, musical instruments, and pleasure aircraft. In that year, they also spent $1.4 billion for higher education, an amount almost exactly equal to funeral and burial expenses.[2]

Reasons for Income Increases

Before we proceed to other matters, we might inquire how this substantial improvement in real incomes came about. A partial explanation is that after 1940 we attained a condition of substantially full employment that has, with minor interruptions, been maintained. Also, because of more and better capital equipment, a more highly skilled labor force, more efficient management, and a continued shift of labor from agricultural to nonagricultural occupations, productivity or output per man-hour has grown more than 50 per cent in the last twenty years. A larger employed labor force combined with the rising output per man-hour has given us an increase in real gross national product of nearly 100 per cent since 1940.

The original motive power that launched this upward movement was the vast and sudden expansion of public and private demand for goods and services that accompanied World War II. However, this demand expansion brought in its train a second revolution that was to do considerable mischief.

THE LIQUIDITY REVOLUTION

The liquidity revolution is undoubtedly the most complicated, but by no means the least important, in our list. A reasonably complete

[1] In the interest of brevity, only one measure of income growth is used here. Detailed treatments may be found in a recent Department of Commerce supplement to *Survey of Current Business*, titled *U.S. Income and Output, 1959*.

[2] The 1940 figures are from the *Economic Report of the President*, January, 1959, p. 155; the 1958 income figures are from *Economic Indicators;* the 1958 consumer spending details are from the *Survey of Current Business*, XXXIX (July, 1959), 17.

outline of the significant changes that have occurred in the financial field in the past twenty years would require a much greater effort than is intended here. The present purpose is more modest and specific. The liquidity revolution refers to the changing relationship between our money supply and the work that money is called upon to perform. Money works by being spent, and we usually measure the work performed by money by the size of the gross national product. If the money supply rises in relation to the GNP, we say that liquidity has risen; if the money supply-GNP ratio falls, we say that liquidity has fallen. If liquidity rises, dollars must on the average be moving more slowly; if liquidity falls, the velocity of money is rising. So much for the semantics of this revolution.

The Money Supply

The American public now holds approximately four times as much money as it did twenty years ago.[3] If we count as money the demand deposits and currency owned by the public, the total of these items rose from about $36.2 billion at the end of 1939 to about $144.2 billion at the end of 1958. Demand deposits rose $85.7 billion and currency held by the public increased $22.3 billion, making a total increase of $118 billion. This very large addition to our money supply did not take place evenly over the period, however. In fact, more than half, or about $66 billion, of the increase occurred from 1940 to 1945.

The manner in which this came about is basically simple, but the mechanics of the process are quite complex. As we all know, money is in no sense a natural phenomenon. Money creation requires a money creator. We actually have three money-creating institutions: (1) the Treasury, which monetizes gold and silver and issues a very small amount of United States notes; (2) the Federal Reserve System, which issues Federal Reserve notes and creates funds when it lends to banks or purchases securities in the open market; and (3) the commercial banking system, which creates demand deposits as a part of its lending and investing activities. The point is that these institutions create money when they acquire assets in the form of gold, silver, corporate or government securities, or the promissory notes of borrowers. The commercial banks also create time and savings deposits that are, strictly speaking, not money but close money substitutes.

World War II Increases

During World War II, the major factor at work in the money creation process was the sale of government securities to the banking system, including open-market sales to the Federal Reserve. The banking system as a whole increased its holdings of governments during the war by more than $100 billion, making possible an increase of about $46 billion in publicly held demand deposits and $20 billion in currency.

Generally speaking, since the end of the war the dominant factor has been the shift of government securities out of the portfolios of the banking system and the substitution for them of loans and corporate and municipal securities. The important facts are that the money mechanism went into high gear during the war years, producing a greatly increased number of dollars; and that this process continued, although at a much slower pace and with interruptions, to the present, so that our money supply is now about four times as great as it was twenty years ago.

If everything else had remained the same, this increase would have entailed an enormous rise in liquidity. What actually happened is considerably more complicated.[4] Immediately following the entry of the United States into

[3] The reader who is a specialist in these matters will, I hope, recognize that the following comments are intended only as a glance at a very complicated topic. Any recent issue of the *Federal Reserve Bulletin* contains the monetary statistics used here.

[4] An excellent summary of postwar velocity behavior may be found in the *Federal Reserve Bank of New York Monthly Review* (January, 1959).

the war, the ratio of money supply to GNP did indeed rise very sharply. In 1942, the velocity of money averaged a little under three per annum; by 1946, it had fallen to a little under two. By the end of the war, the money supply was equal to about half the gross national product. The low wartime velocity compares with a velocity of four or more during the 1920's and between two and one-half and three during the 1930's. This happened because the huge increase in the money supply during the war was accompanied by price control, rationing, patriotic appeals to save and buy war bonds, and consequently a very high saving rate. The increased money supply piled up in the hands of individuals and business firms at a rate greatly exceeding the rate of increase in the GNP.

Postwar Movements

It was a very different story after the war. Beginning in 1946, this colossal money stock began to move faster, and velocity started back to levels prevailing in the 1930's. Individuals promptly reduced their extremely high wartime saving rate, cast an eye on their bank balances and savings bonds, and started a shopping spree for automobiles, clothing, furniture, home appliances, housing, and a thousand other consumer goods and services. Those were the days when household durables moved out of the front doors of retail stores with packing case excelsior still attached; when one had to wait months for delivery of a new car; and when Americans got married, started families, and searched by the millions for housing. Similarly, business firms that ended the war with fat working capitals saw no reason not to plan for expansion; they restocked with everything from baby food to blast furnaces. The first postwar consumption and investment boom was under way. And it was underwritten both financially and psychologically by the accumulated wartime liquidity.

The velocity of money continued to rise after 1946. By 1953, it reached the 1942 level and after that year pushed beyond the levels prevailing in the middle 1930's. The general picture comprises then a sudden rise in liquidity during the war years, followed by a working-off process as GNP rose after the war. And this brings us to the threshold of another issue.

GNP and Liquidity

The revolution in liquidity was accompanied by almost a doubling in *real* gross national product. In 1958 prices, the GNP in 1940 was about $227 billion, and in 1958, it was $441.7 billion.[5] This is our old friend the income revolution again. But we have just noted that the mid-century gyrations of liquidity, up in wartime and then down in the postwar years, seems to have completed a full circle, with the money supply in the later 1950's standing in about the same ratio to GNP as it had in the prewar years.

How is it possible for liquidity to be at about the prewar level when the money supply is four times larger and real output twice as high? This is not really paradoxical at all, as a moment's thought will show. Liquidity is measured by the ratio of money supply to the *money* value of GNP. When we say that liquidity is at about the prewar level while the money supply is four times larger and real output about twice as high, we are simply saying in another way that the price level is approximately twice as high as it was before the war. This leads us directly to the next revolution, the consideration of which will incidentally give us more than one backward glance at the significance of the liquidity revolution.

THE PRICE REVOLUTION

The price revolution has been, in one way, the most popular of our revolutions. It has received more headlines than any other. By the insistent pounding of journalistic enterprise, the American public has been made painfully aware that we live in an age of inflation. By

[5] The 1940 figure is from the *Economic Report of the President*, January, 1959, p. 140; the 1958 figure is from the *Survey of Current Business*, XXXIX (July, 1959), 7.

comparison, the income revolution comes off a poor second, and the more important facts of the liquidity revolution are scarcely known to the general public.

News of inflation is of course bad news, and bad news provides drama and excitement. A conservative guess is that news of the price revolution has outweighed coverage of the income revolution by ten to one in the public press. One result of this disparity is that many Americans seem to have a curiously ambivalent attitude toward their economic fortunes in the past twenty years. On the one hand, sober reflection recalls the main outlines of the rise in real incomes; on the other hand, the constant reminder of inflation makes for nagging doubt.

Furthermore, the striking gains by previously lower-income groups, together with a certain degree of leveling in the upper-income brackets, have accentuated the anxieties of many middle-class people. Small businessmen and white-collar workers who were relatively well off a generation ago have found, in countless cases, that their incomes and social status have slipped somewhat relative to those of skilled industrial workers, farmers, and trade union officials. The inflation of the past twenty years is intimately bound up with the vague feeling that the income revolution is somehow fraudulent or perhaps in danger of fading away at any moment.

Index Comparisons

The main facts of the price revolution are easily told.[6] In 1940, the Consumer Price Index averaged 59.9, with 1947-49 as the base period. In 1958, the index stood at 123.5—a gain of 63.6 points or about 106 per cent. But this sizable increase was by no means continuous. It occurred in several rather distinct periods, as Table 1 indicates.

TABLE 1

Changes in Consumer Price Index, 1940-58

Period	Point Increase	Total Point Increase (per cent)
1940-45	17.0	26.7
1945-48	25.9	40.7
1948-50	0.0	0.0
1950-51	8.2	12.9
1951-55	3.5	5.5
1955-58	9.0	14.2
Total	**63.6**	**100.0**

This table throws considerable light on the price revolution as a whole. It tells us, for example, that more than two-thirds of the point rise in the index over the entire period took place by the end of 1948; that the onset of the Korean conflict provided nearly 13 per cent of the total rise; and that about one-fifth of the rise has occurred since 1951. If we add the wartime, immediate postwar, and Korean episodes, we find that they account for over 80 per cent of the total increase from 1940 to 1958. Also, the annual *pace* of inflation has varied considerably. Setting aside the war years as a special case, the average annual compound rate of increase in consumer prices was about 10.2 per cent from 1945 to 1948, 0 per cent from 1948 to 1950, 8.0 per cent from 1950 to 1951, 0.8 per cent from 1951 to 1955, and 2.5 per cent from 1955 to 1958.[7]

Changes in the Economy

From this experience, one conclusion is that the price level of a generation ago has probably gone forever; the price revolution is an accomplished fact. This is of some importance

[6] The Consumer Price Index is only one of several indexes that might be used to depict the price revolution. The Wholesale Price Index moved from 51.1 in 1940 to 119.2 in 1958, an increase of about 133 per cent. This index shows a larger change than the consumer index primarily because of the very large (150 per cent) increase in farm product prices. Wholesale commodities other than farm products and processed foods went up about 112 per cent, more or less in line with the rise in the consumer index. Similarly, the GNP deflators developed by the Department of Commerce rose about 126 per cent from 1940 to 1958. Price data used here may be found in the *Economic Report of the President*, January, 1959; wholesale prices, p. 180; consumer prices, p. 184; and GNP deflators, p. 144.

[7] "Your Choice on Rates of Inflation," *Business Week* (August 8, 1959), p. 95.

for a sociopsychological reason. Millions of Americans have vivid recollections of the prewar years, and for many of them the price revolution has become inextricably entangled with other mid-century social changes. The era of the price revolution has also been the era of bigger government and higher taxes, disturbing technological change, pervasive American involvement in world politics, the cold war, and rapid growth in trade-union membership and influence. In this sense, the great inflation has become a symbol of transition from the prewar way of life to the uncertain and confusing world of the late 1940's and early 1950's.

Unfortunately, the facts of the income revolution have played only a secondary role in providing a coherent and balanced explanation of what has happened since 1940. From an objective point of view, the real income revolution is certainly basic; but in public sentiment and attitude, inflation has assumed the role of the great frustrater of our goals and wishes. How nice it would be if real per capita income had increased 106 per cent instead of *only* 53 per cent! But after all, this is a very human attitude. Increased real income is first welcomed, then absorbed in higher living standards, and finally assumed to be in the nature of things. In short, it is enjoyed and forgotten.

A second general conclusion is that, for the period as a whole, the inflationary pressures were overwhelmingly of a monetary and financial nature. Here is one point at which some popular opinion parts company with the economists. This is understandable. The liquidity revolution, as we have seen, was a deeply rooted change that for the most part remained invisible as a phenomenon in its own right. Consider for a moment how the rise in wartime liquidity appeared to three groups. For the great majority of commercial bankers and proprietors of our savings and other financial institutions, the rise in liquidity appeared on the scene as an increase in the inflow of deposit and savings funds. For the merchant and manufacturer, the liquidity deluge took the form of a surge in cash income from more sales. For individuals, it took the form of pay increases and swollen money incomes, a large part of which spilled over into such liquid savings as bank deposits, currency, and war savings bonds.

But the roots of this revolution were not in increased thrift, increased sales, or increased payrolls; they were in the wartime borrowing operations of the United States Treasury, as borrowing and government expenditures spread newly created money and liquid government securities throughout the land. The increased liquid savings of the public were a by-product of the wartime deficits, and the larger the deficits, the larger the savings.[8]

As was mentioned previously, the abnormally high state of liquidity produced by the war was worked off rather rapidly as the new money began to move faster after the scrapping of most wartime controls. By 1950, money was moving at about the 1940 pace; and by 1957, velocity had reached a new postwar peak. This tells us a great deal about the price revolution. It strongly indicates that the primary underlying reason for most of the inflation was the creation and subsequent activation of a greatly augmented money supply.

Another View of Liquidity

In this connection, we are now able to view the interesting movements of liquidity from a somewhat different angle.

In the later 1950's, the economy was, in general, no more liquid than it was in the 1930's, while at the same time the price level was

[8] This process is one of the least understood and appreciated economic developments of the present century. An amusing by-product of this fact has been the widespread postwar view that the individual and business "saving" achievement of the war period, as evidenced by the huge increase in bank-deposit and war-bond holdings, was a desirable and beneficial thing; whereas the growth of the federal debt was something to be deplored. A fascinating inside-the-Treasury view of these matters is Henry C. Murphy's *The National Debt in War and Transition* (New York: McGraw-Hill Book Co., 1950).

about twice as high. In the process of working itself down to prewar levels, wartime liquidity simultaneously pushed up price and income levels and thereby brought about its own demise. The bulge in liquidity was killed off by the income and price revolutions. We can say the same thing this way: The liquidity deluge sneaked in during the war, carried out most of its work in the first few postwar years, and then faded away, leaving a doubled price level as a memento of its visit. Here indeed is a finished revolution.

PUBLIC-POLICY REVOLUTION

From the standpoint of the domestic performance of the American economy, the public-policy revolution may appear to future observers as the most important of all. In a long-run perspective, it represents an almost complete about-face in our attitudes toward the economy's performance levels. It has been simultaneously a revolution in statutory responsibility, year-to-year policy-making, and public attitudes. To be accurate, we should note that none of these subrevolutions is really complete, but the process has gone so far that there is now no prospect of turning back. Pessimists who looked for some sort of counter-revolution following the election of 1952 were in some cases dismayed; they found that the new administration's ideas regarding the responsibilities of the federal government for the promotion of economic stability and high-level employment were not very different from those of its predecessor.

Roots of the Policy Revolution

The immediate roots of the public-policy revolution lay in the experience and the ferment of professional and popular discussion of the 1930's. By far the most significant collection of public-policy ideas to come out of the depression decade was that compendium of fact, opinion, theoretical abstraction, prognostication, and practical policy prescription that goes under the name of Keynesian economics. The great theme of this new approach was that income, employment, and price levels are determined in the short run by the volume of investment, consumption, and government spending. During the 1930's and early 1940's, a battery of statistically minded economists in the Department of Commerce and elsewhere gave flesh and blood to this way of looking at things by coming up with real figures for these magnitudes cast within the framework of our national income and product statistics.

But economic theorizing and statistical compilation by no means provided the major push that brought about this revolution. This came rather from the widespread determination not to lapse into the stagnant morass of the 1930's. The Employment Act of 1946, which committed the federal government to bending its policies in the direction of promoting "maximum production, employment, and purchasing power," was passed by large majorities in both houses of Congress. Looking back at the act from the vantage point of fourteen years or so, it is easy for us to point out, as its critics never tire of doing, that the act was biased in its preoccupation with high-level employment and negligent of the dangers of inflation. Our experience since 1946 has made us more wary of easy solutions, but the Employment Act remains a great landmark in our public economic philosophy.

Fiscal Policy

The mainstays of domestic stabilization policy are the management of government taxing, spending, and borrowing activities; and the management of the public's holdings of, and access to, money and close money substitutes. During the 1930's, throughout World War II, and in the early postwar years, fiscal policy was in its heyday. The depressed state of business confidence in the depression years made easy money and credit largely ineffective as a stimulant; and during the war years, monetary policy was tied down to the job of facilitating

Treasury borrowing by standing ready to assist in the creation of whatever funds might be needed above the voluntary savings and war-bond purchases of the public.

Meanwhile, the favorable income and employment effects of wartime spending pointed up the fact that what the economy seemed to need during the 1930's was a really massive dose of demand. Enthusiastic proponents of the virtues of fiscal policy as a demand regulator had their inning, and some of their enthusiasm found its way into the thinking of those who framed the Employment Act. It is probably safe to say that they are somewhat milder in their zeal after these many years.

Monetary Policy

But monetary policy was to have its day, too. The wartime Federal Reserve commitment to support government security prices and maintain market interest rates at artificially low levels continued for a time after the war. But in the early 1950's, our central bank gained new spokesmen and a more vigorous defense for an independent course of action divorced from Treasury needs. Two sets of circumstances, combined with newer views regarding the *modus operandi* of central bank action, were mainly responsible for this renaissance of monetary policy.

The primary circumstance was the unexpected degree and persistent character of the postwar inflation. It brought with it a wider understanding of the fact that tying Federal Reserve policy to the needs of the United States Treasury meant the loss of effective control over the money supply and, hence, the liquidity and spending potential of the public. The second circumstance, and the one that propelled the Fed into genuine independence, was the inflationary burst that occurred in late 1950 with the onset of the Korean conflict. These circumstances brought about the Treasury-Federal Reserve "accord" of March, 1951, and the effective restoration of central bank influence in the money and capital markets. Commercial banks no longer had easy access to funds via a pegged government securities market; the Federal Reserve discount mechanism was given new life; and interest rates, both long and short, began a rise to more realistic levels. Simultaneously, monetary policy received intellectual support from the newer argument that tighter credit produces its anti-inflationary effects not only by discouraging borrowers, but also by making lenders more reluctant or less able to lend.

The Federal Reserve thus turned out to be the Cinderella of postwar economic policy. Rising from bondage to Treasury debt management requirements, the Fed became an equal partner in the stabilization effort. The inherent importance of central bank policy was of course bound to be recognized sooner or later. What appeared to be a basic inflationary bias in the postwar period hastened this recognition. By the end of the 1950's, nearly all informed observers were prepared to admit that monetary policy is a powerful tool in the stabilization arsenal.

But this development is simply a part of the public-policy revolution, which is more than reliance on this or that stabilization technique. It consists more particularly in the widely accepted view that public policy can and should powerfully influence the key economic variables that determine income, employment, and price levels. A kind of consensus now exists as to the proper actions to be taken in the event of recession or inflation.

A symptom of this consensus is the difficulty we have in reconstructing and sympathizing with the thought processes that passed for sound thinking on stabilization policy as recently as twenty-five years ago. It astounds us to recall that in 1932 and 1933, the highest wisdom of the land apparently agreed on the necessity of budget balancing and deflationary belt-tightening as depression remedies. We now take it as a generally agreed matter that budget deficits are acceptable and easier credit is necessary during a recession downswing, while tight money and a budget surplus are desirable during inflationary high-level

employment episodes. This consensus exists regardless of the many differences that arise on matters of degree and timing. The 1960's will no doubt deepen and broaden this consensus.

SOME OBJECTIONS

Implicit in our discussion thus far is the contention that the revolutions reviewed are in some sense basic. It may be worth while here to answer briefly a few of the possible objections to this claim. Many observers might wish to add to this list of revolutions. Others would probably concede that the changes chosen here are indeed important but would add that they are really only side issues or parts of another story. The list could of course be enlarged almost without limit, provided we were not too careful about overlapping.

Other Revolutions

Two examples come to mind immediately. It could be argued that one of the really striking changes of the past generation has been the advance of industrial research and product development. The postwar years in particular have seen the mushrooming of new industries and products, including atomic power, jet air transportation, electronic equipment for home and industry, new synthetic fabrics, frozen foods, high-quality prefab housing, light metals and plastics, air conditioning, and so on. It is true that product innovation has been a particularly dramatic aspect of the last two decades; but the point here is that these developments have been but one aspect of the income revolution, which encouraged and made possible these changes in the composition of our real incomes.

A second possible addition to our list is one dear to the hearts of many economists—namely, the structural changes in our income-tax and government transfer-payment systems that provide a cushion between fluctuations in income produced and personal income received. It is indeed true that on the testing ground of three postwar recessions these systems seem to perform well. In 1949, 1954, and 1958, disposable personal income and personal consumption spending were firmly contracyclical in behavior. The record is good even if we concede that in the first two cases a fortuitously prearranged tax cut also helped out. But here, too, we must say that this is a subsidiary development, a part of the public-policy revolution.

Side Issues Only?

The charge that these revolutions are basically side issues is likely to take two forms. First, there is massive support for the view that the really significant revolution of our time is the growth of big government, of creeping socialism and regimentation, which inevitably bring in their wake the specter of deficits and inflation. This is a difficult argument to counter because it usually implies a constellation of underlying political and economic ideas that is not very amenable to the kind of approach followed here. There is, however, agreement on the fact that wartime deficits played a key catalyzing role in pushing our revolutions along. They produced the liquidity build-up, financed the push to a full-employment GNP, underwrote the boom and inflation of the early postwar years, and indirectly accelerated the development of our stabilization philosophy. But aside from general agreement on this point, there is little more that can be said short of a full-scale analysis of American political and economic history in the twentieth century.

One more comment is appropriate. Those who are most vocal in expressing this charge usually take a rather jaundiced view of the major developments of the past twenty or twenty-five years. The view here has been, on the other hand, that the American economy and the American people are immensely richer and stronger than they were at the end of the 1930's or, indeed, than they have ever been.

A second form that the charge may take is that the basic revolution of our time, aside from the arrival of big government, has been

the rise of trade-union power, which directly brought about the great inflation via wage pressure. When combined with the charge just discussed, as it usually is, it seems to make a formidable package. But this contention can in general be countered more easily than the creeping socialism thesis by in turn posing this question: If the labor movement had remained at its prewar strength and the wartime financing arrangements had remained unchanged, would the postwar inflation have occurred? It would be most difficult to deny this. In fact, we can probably go so far as to say that the basic contours of the mid-century inflation would have appeared in the complete absence of unions, assuming the conditions making for the liquidity revolution remained. Perhaps one of the basic arguments of the discussion so far is that the wartime liquidity bulge has been at the heart of our economic experience of the past two decades.

But fairness in answering hypothetical opponents, who cannot reply, requires a qualification. The so-called cost-push explanation for inflation has enjoyed substantial popularity since 1955, and particularly during the downturn in business activity of 1957-58, when consumer and wholesale price levels actually edged upward despite falling demand. But even if the wage-cost-push thesis is found to be partly or wholly valid for the past few years, it would qualify but not seriously alter our picture of the price revolution. Furthermore, there are quite respectable *monetary* interpretations of the post-1955 price rise, which for obvious reasons cannot be examined here.

Before leaving the subject of objections, it may be appropriate to remark that high visibility is often a very poor indicator of basic change. Trade-unions and their leaders are highly visible. Walter Reuther, David McDonald, and James R. Hoffa are forceful men; they show up well on television; they travel and make speeches; they have power and influence. But it is not unlikely that if they and their unions had never existed we would still be paying about a dollar a pound for sirloin, ten dollars a day for a hospital room, fifteen dollars for a pair of shoes, and eighty-five dollars a month for a small apartment.

A FIFTH REVOLUTION?

Foreign Policy Revolution

My final comments begin with a confession that the so-called revolutions reviewed here are at best only tentative selections made from a point in time that may prove to be most inappropriate in a longer-run perspective. Ten or twenty years from now, these changes may have passed into relative insignificance. And while crystal gazing was ruled out early in this discussion, something should be said here about the prospect that our next revolution in economic affairs seems to be one that will involve our relations with the outside world.

European Interests

This revolution began in our World War II decision to provide aid to allies through the lend-lease route instead of the unrealistic loan-with-interest method of World War I. It continued with our assumption of almost sole responsibility for immediate postwar relief through UNRRA and other agencies, for European recovery through the Marshall Plan, and for mutual security military support for NATO and our other allies. Starting with the Point Four program, it began to encompass the more remote goal of raising the productivity and incomes of friendly underdeveloped countries. By the late 1950's, the first great goal of European recovery had been achieved. Meanwhile, the direction of United States economic aid took a rather drastic turn toward the Middle East and the countries of southern and southeastern Asia.

Switch to Middle East

As the decade of the 1950's neared an end, it became more apparent that preoccupation

with the economic problems of Western Europe was now a thing of the past and that the area of basic East-West economic and strategic competition would be Afro-Asia. This shift in our attention has been symbolized by the sudden geographical widening of significant day-to-day news. Ten years ago, Central Europe and the Chinese-Korean areas were the centers of world interest. In the second half of the 1950's, the entire belt from the Formosa Straits to North Africa opened up a new area of East-West competition. Ten or more years ago, a vice-presidential tour of Africa would probably have seemed a needless luxury; and John Gunther, our foremost collector of international inside gossip, might have found the market for an *Inside Africa* a little thinner than it turned out to be later.

Increased Export Capacity

Put briefly, these shifts seem to constitute the beginnings of a long-term change in the international economic position and policy of the United States. First, the end of the European phase of the so-called dollar shortage has as its counterpart the greatly increased competitive export capacity of our European friends. British, French, German, and Italian automobiles, typewriters, electrical machinery, basic steel, chemicals, machine tools, and a host of other products now compete successfully with American industry. The export successes of these and other countries have permitted them to take giant steps in the direction of currency convertibility and to enlarge their gold reserves at the expense of dollar holdings and the United States gold stock. All this has signified, in short, that the dollar is no longer the pre-eminently "hard" currency of the world.

Expanded Investment

Second, the over-all East-West competitive strategy seems to point emphatically to the long-run desirability of greatly expanded American private and government capital exports to the underdeveloped countries of Africa and Asia. But we have much to learn about the know-how of providing useful and mutually profitable aid to the hundreds of millions of proud, ambitious, status-conscious and culturally aloof peoples from Tangier to Saigon. Private investment in this area is heavily concentrated in our multibillion-dollar oil interests in the Middle East, a region that more than any other provides an example of the ambiguities and ironies of our position. Saudi Arabia, where our oil stake is greatest, is a politically inert, intellectually isolated, quasi-medieval Moslem kingdom. Kuwait, whose oil we share with the British, is an immensely productive but extremely fragile dependency of the British Foreign Office.

Above all, our oil operations in these and other Middle Eastern countries provide the Communists with ready-made illustrations of the supposed machinations of "oil monopolies." The almost ridiculously lavish technical assistance and physical facilities that companies such as the Arabian American Oil Company provide for local populations[9] seem tiny compared with the passions of Arab nationalism and the persistence of the "exploitation" slogan.

The Raw-Materials Problem

Third, the long-run significance of the underdeveloped areas has another facet that is likely to become increasingly important for the domestic economy of the United States—our growing dependence on these countries for industrial raw materials, including such basic items as petroleum, iron ore, lead, zinc, tungsten, manganese, fluorspar, aluminum, and bauxite.[10] Our future import requirements for

[9] Amazing photographic evidence on this point may be found in any recent issue of the Arabian American Oil Company's *Report of Operations to the Saudi Arab Government.*

[10] The most recent study of our raw-materials position is Percy W. Bidwell's *Raw Materials: A Study of American Policy* (New York: Harper & Brothers, 1958). This particular list of materials is taken from page 5.

some of these materials are not likely to grow as fast as our national product, but the opposite is true in other cases.

The fact remains that we now stand as a net importer rather than exporter of industrial materials, a change that the enormous demands of World War II and the early postwar years brought about rather suddenly. The United States market does not now and will not constitute in the future the only source of increased demand for these ingredients of economic progress. The other developed countries of the free world have large and growing appetites as well; the Soviet bloc will take a sizable chunk of increased supplies; and the continued progress of the underdeveloped countries themselves will require added supplies of these materials.

These considerations give added weight to the proposition that accelerated resource development all over the world, and particularly in such material storehouses as Africa, southeastern Asia, and Latin America, is a prerequisite for the long-run growth not only of the American economy but also of the economies of the entire free world. We have already begun to feel the impact of the raw-materials dilemma in our balance of payments; but with a few exceptions, our capital export activities are just beginning to do something about it.

Our four revolutions have been important, each in its own way, but the fifth revolution may turn out to be the greatest of all.

THE whole profile of what used to be called "economic problems" has changed. The strictly economic issues—those of production and productivity, of the distributive mechanisms, even to some extent the issue of the size of the economic unit and the division of the national product—have increasingly become technical problems and have been pushed into the background. What may be called the political, psychological, and moral issues of the economy have come into the foreground, and the anxiety that an observer must still feel about the economy must more and more be directed to them.

The American economy of today is not the same one that Veblen attacked at the turn of the century and John Bates Clark defended, nor is it even the same that the TNEC described and analyzed in its path-breaking survey at the end of the 1930s. There are few more remarkable stories in the history of social institutions than the way in which the American economy transformed itself and its problems in the era of the Big Technology and the Big Market.

—Max Lerner

AMERICA AS A CIVILIZATION

JOSEPH R. HARTLEY

Yesterday's Shipping Clerk
TODAY'S TRAFFIC MANAGER

THE PAST fifteen years have brought exciting developments to the field of industrial traffic management. Prior to World War II, only very large firms had traffic managers, and many of these operated with circumscribed authority and responsibility. The vast bulk of America's freight transportation was purchased by shipping clerks who assumed that management of a firm's physical distribution meant no more than calling a railroad freight agent when a car was needed to move goods to a customer. Traffic management was a fledgling at best among the developed areas of production, marketing, and financial administration.

Dramatic events during the past decade and a half have thrust traffic management into the Space Age and have transformed it into one of the most rapidly maturing fields of professional management. The future promises even better things in the way of improved service to American business and better transportation cost control. The modern traffic department does far more than simply buy transportation service as its predecessor did. Today, the traffic manager ensures that his firm has the lowest-cost transportation available consistent with service required by sales and production departments.

Lowered transportation costs mean more than a simple reduction in transportation expense on a firm's financial statements. The numerous secondary effects often rank as more significant to top management than the direct cost reductions. Sales markets are widened, new supply sources are opened, and the firm finds that it can compete more effectively. Many executives consulted during the course

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of this study affirm that, above all else, customer good will is improved by assuring rapid, efficient, and dependable delivery of goods. Indeed, effective administration of inbound and outbound shipments has become a powerful competitive tool as transportation plays an ever-increasing role in the economy.

Emphasis on transportation cost is by no means the prime role of today's industrial traffic manager. He is rapidly being transformed from a transportation manager into a distribution manager who co-ordinates packaging, shipping, actual transportation, warehousing, and local delivery. He may also control the flow of raw materials and parts into a manufacturing firm or the flow of finished goods into wholesaling and retailing firms. He serves in an advisory capacity to assist all other departments of the firm in decision-making that involves transportation as an important variable.

The scope of traffic management has broadened immensely; it is rapidly becoming a genuine profession. The National Industrial Traffic League has been the traditional national association among traffic managers. While it has performed many useful services to members and to the nation through its influence on national transportation policy, it has not provided quality control over its membership.

Early in the postwar period, the numerous regional and local traffic clubs joined together nationally in the Associated Traffic Clubs of America. Key traffic managers also sponsored the new American Society of Traffic and Transportation in 1946. The AST&T has the objectives of a genuine professional organization. It has established standards of knowledge, experience, technical training, and ethics for all members. Many groups state similar lofty purposes but then do little to ensure that their members live up to them. The American Society became a notable exception when it moved straight from organization to a program of rigorous examination for other than founding members. The four examinations cover the fields that are crucial for real executive training of traffic managers: (1) general business, including principles of economics, marketing, political science, economic geography, and finance; (2) transportation economics; (3) principles of traffic and transportation management; and (4) interstate commerce law. The final requirement for certification consists of a research thesis dealing with a problem of transportation. The examination program naturally took considerable time in gaining momentum, but it now has 3,000 persons currently enrolled in various stages of the testing procedure on a nationwide basis. The day is not far off when AST&T certification for traffic executives will carry the same connotation as the C.P.A. or C.L.U.

WHY THE NEW ROLE?

The remarkable growth of both traffic management and the men in traffic poses the question, "Why has it come about?" The means by which people transport themselves and their trappings have developed so many facets that transportation contributes to the cliché that life is more complicated than it used to be. Like many hackneyed expressions, this one contains truth.

Traffic management problems were simple in 1880 because transportation media were relatively uncomplicated. The railroads offered service so superior to any other means of movement that a choice of how to ship a product certainly did not require an executive decision. Consider, by contrast, the maze of variables that faces a transportation manager in selecting means of shipment today. He may ship by railroad, truck, barge, air freight, Great Lakes boat, ocean steamer, or possibly pipeline. Optimal control of service and cost frequently dictates a combination of truck-barge, rail-barge-rail, or any of the others. Each mode offers a wide range of service today. No company should buy better transportation service than it needs, but purchasing inadequate service may cost a fortune.

The railroads offer local freight trains, through service, LCL, CL, expedited service, merchandise service, package cars, peddler cars, pool cars, Railway Express, piggy-back

of five kinds, container cars, and a host of other services. An equally confusing array is offered by the truck lines and barge and ocean service. There is the additional problem of whether to use contract or common carrier or to operate a private fleet. The latter may constitute a major break-through in a firm's distribution program, but it can also be an epic mistake.

At least seventy-five different types of service can be identified, and this is by no means an exhaustive list. Furthermore, it ignores the fact that many companies spend large sums simply to move their employees, which introduces the whole range of passenger services from salesmen's cars through company planes to helicopters.

Space does not permit even a listing of the types of specialized equipment from which a traffic manager must choose in making a rational choice of transportation media. Transportation equipment manufacturers have wrought a dramatic revolution in improved capital goods for this industry and have outdone themselves in designing special-purpose vehicles. Consider the types of rail cars or barges that can move everything from acids to liquefied natural gas, or truck trailers that handle items ranging from milk to coal.

The amazing expansion of types of transportation modes and services is only one aspect of the story behind the traffic manager's rise to a place in the sun among management's top echelon. As each new mode has been introduced, the number of firms offering these services has expanded. Yet many companies that have cost accounts allocating the expense of lubricating oil consumed in producing each end item select suppliers of transportation service in a remarkably naïve, "pin-the-tail-on-the-donkey" approach.

The confounding complexity of the transportation industry itself is one reason for the development of distribution management from the shipper's viewpoint. However, others merit brief consideration. The shipping firms themselves have become vastly more complicated and intricate. No one knows how many different products are moved each year in the United States. We do know, nonetheless, that the Air Force alone has 1.3 million individual items in its supply system, but consumes less than 4 per cent of our GNP.

Furthermore, America has become a nation on the move. Improved transportation service has steadily widened markets to the point where a firm such as General Electric can supply the largest national market in the world from its fabulous Appliance Park in Louisville, Kentucky.

Economies of mass production rest squarely on mass distribution, which necessarily implies long-distance, mass transportation. We probably have "seen nothing yet." America's prodigious productive machine is bursting the geographic bounds of the United States and is reaching around the world for markets and a growing portion of its raw materials. The traffic manager of tomorrow will probably have to know as much about South American and European rail and truck service as he does about the route from Chicago to New York.

One can safely conclude that the needs for traffic management have grown at a great rate. Indeed, they have outstripped the rate at which shippers have been able to fill the gap with adequate procedures, traffic departments, and qualified personnel.

The Transportation Association of America estimates that American businesses are spending about $37 billion on transportation. Total national economic resources used to provide the capital plant and the operation of our national transportation industry equal roughly one-fourth of the gross national product. Despite this substantial role of transportation in business operation today, we might as well admit before further elaboration that many companies of all sizes still relegate traffic control or management to a routine clerical role. These firms, faced with prospects of intensified competition and buyers' markets, are beginning to wonder why their delivered prices are higher than those of their competitors. Business obviously faces a rigorous test of efficiency in years to come. In this environment, the difference between profit and loss for many industries will be in unrelenting control of freight costs and services. This is traffic's

job. It will be performed by firms with foresighted leaders. Many firms not in this position will soon have no need for traffic management or any other kind.

MANAGERIAL FUNCTIONS

Are there certain basic duties and responsibilities that most traffic departments perform today? Thirty years ago, the answer would have been a flat "no." Typical traffic departments in that era did no more than load and unload freight and check freight bills.

The opposite is true today. A survey of thirty-one traffic departments of either Indiana companies or Indiana plants of national firms highlights the uniformity of performance. The analysis revealed nineteen primary functions that are performed by three-fourths of the companies. Table 1 lists twenty-eight responsibilities that are considered to be inherent primary duties by most of the traffic managers consulted. This breadth of work is by no means average for traffic management as a whole. Many firms still "manage" their physical distribution with glorified shipping clerks because they have not found a qualified man to fill the post or because top management has simply ignored this source of economy. The items in the table show what top management of some of the best-managed firms in the nation demand of their traffic managers.

The list may not be exhaustive nor will it fit every firm under all circumstances. Nonetheless, when a firm discovers that some of these functions are not being performed, top management should take a fresh look at the entire traffic department. Generally, all of these functions should be placed in the hands of the transportation manager, where they can be carried out in a skillful, integrated manner.

These functions are all similar in that they involve the direct administration of freight movement from point of origin to final destination. For purposes of discussion, they can be effectively divided into the broad categories of transportation management and transportation cost control. The former is primarily an administrative task, although it may include many functions that involve the physical handling of freight. Transportation management includes such operations as selecting carriers, arranging for an adequate supply of carrier equipment, routing, diverting, shipping, receiving, and warehousing. All of these involve control of the physical flow of raw materials to

TABLE 1

Incidence of Primary Functions of Traffic Departments in Thirty-one Firms

Percentage of Firms Reporting	Functions
100	Ascertain rates
100	Trace shipments
100	Route shipments
100	Audit freight bills
100	Determine classification
100	Maintain tariff files
100	Select types of carriers
100	Select specific carriers
100	Secure permits in case of embargo or strike
97	File claims
97	Divert, reconsign, and stop shipments in transit
97	Expedite shipments
97	Prepare loss and damage claim evidence
97	Prepare rate case evidence
90	Handle cases before carrier and regulatory bodies
90	Arrange for adequate car and truck supply
87	Consolidate and pool orders
84	Arrange for payment of carriers
81	Prepare shipping documents
74	Shipping
71	Arrange for outside audit of freight bills
71	Supervise marking of freight
71	Supervise loading and bracing of freight
68	Supervise weighing of freight
61	Control import-export shipments
58	Supervise packing of freight
55	Receiving
52	Warehousing

SOURCE: *Author's research.*

the plant and finished products from the factory or distribution centers to markets.

Transportation cost control encompasses those traffic management actions that focus on the administration of a firm's payment for movement service. It includes three factors—cost accounting, legal protection from excessive cost, and transportation cost prevention. Cost accounting concerns accurate determination of shipping expenses, followed by careful analysis of all sources of transportation costs. Legal protection from excessive cost encompasses traffic's legal practice before all types of regulatory bodies.

These primary functions of traffic management are by no means the entire job of good traffic management. Cooperative services are becoming a second vital facet of a traffic executive's work. Nevertheless, the primary functions alone are so complex in a modern industrial society that they require trained, specialized personnel operating in an organized manner. An abbreviated discussion of some of the traffic manager's primary responsibilities will illustrate the technicalities in this phase of work.

Selecting Carriers

The appropriate carrier must be selected before any traffic can be moved. The variety of services available today has transformed this area into one of the most critical. The desire for rapid delivery and its many implications for production and marketing must be weighed against the higher costs incurred with high-quality service. The type of product shipped and the market in which it is sold are prime considerations. The state of competition within the industry must be considered. The same product may be sold in different localities in varying sizes of shipments. Each of these shipments presents different market conditions and, in turn, varying transportation requirements. Painstaking research and analysis should be conducted continuously to ensure that no costly errors are made.

Each mode of transportation must be examined to determine its inherent advantages in meeting the company's movement needs. Combinations such as rail-truck or rail-barge often may prove superior to exclusive use of one mode. The best mode of transportation must be selected to fit a specific shipment traveling to a certain customer with his own peculiar requirements. Once a choice of the general type of carrier has been made, a particular carrier company must be selected. One customer may be served by three railroads and twenty truck lines. Traffic department personnel have to be intimately acquainted with each carrier and its service to innumerable locations. Finally, these relationships and factors change perpetually. Customers are lost and new ones are gained. Carriers change their rates, equipment, operating techniques, and service. Traffic specialists clearly must be in charge of this function. Yet thousands of American firms still rely on blind performance in some vague hope that this particular aspect of the business operation will manage itself.

Embargoes or Strikes

Virtually every traffic department is occasionally faced with the problem of strikes within the transportation industry. No business executive needs to be told of the losses that may be incurred as a result of such strikes—the loss of profits when goods cannot be marketed, the expenses of storage for goods that cannot be shipped, loss of customer good will, and possible shutdown of production. Traffic management, with the close relations to carriers that it entails, can usually keep the flow of goods moving, even though it may require use of circuitous routes, higher costs, and poorer-quality service.

Classification and Rates

Classification is the grouping of articles with similar transportation characteristics into categories to be used in applying rates. It allows the application of a single freight rate to many items classified together. Although rate-making is thereby simplified, the problem of classification itself is extremely complex. Weight and bulk of an article, value, susceptibility to loss or damage, type of container, cost

of service rendered, and numerous other factors influence classification and, hence, the final rate.

Special carrier committees determine classification, but it is up to traffic to provide the information. Firms that do not defend their requirements for low classifications and rates cannot expect carriers to subvert their own interests to do so. An alert traffic manager continuously supervises the classifications of all of his company's freight.

Rates must be determined from carrier tariffs once an article's classification has been established. Pricing in the transportation business is probably the most complicated and elaborate structure of any industry in the world. Virtually every shipment has a different rate quotation, since rates vary with distance. With at least 30,000 important shipping points in the United States, the possible combinations of rates for firms shipping to or from outlying plants and warehouses number in the millions.

Actual determination of the rates from confusing tariff files constitutes only a small portion of rate work. Every good traffic department negotiates for lowered rates on its firm's products when this seems feasible. Much of the tonnage shipped in this country moves on exceptions to classifications or on special commodity rates that cannot be secured without expert analysis and negotiation. Firms with vigilant traffic departments are the ones that enjoy reduced rates. Consolidation of small shipments into carloads or truckloads offers continuous sources of savings, and the rates given competitors must be scrutinized to ensure that they are not given unfair advantages.

COOPERATIVE FUNCTIONS

The traffic manager is not merely a master of technical transportation detail. His job is also one of co-ordination with administration, sales, and other divisions of the business. Traffic work in this area encompasses an extensive list of duties that may be termed cooperative functions, involving those tasks that are performed in conjunction with and for the benefit of specific groups both within and outside the firm. It is particularly in the area of cooperative services that the orbit of traffic management has expanded so rapidly in the past decade.

Cooperative functions have three distinguishing characteristics. First, they relate to transportation considerations but are only indirectly concerned with the daily movement of freight. Second, they involve serving in an advisory and service capacity for groups outside the department. The third distinctive feature is their varied scope.

The one cardinal principle of effective traffic administration is combined operations, since traffic departments serve in a staff as much as in a line capacity. Table 2 shows the cooperative functions examined in a survey of thirty-one Indiana traffic departments. The percentages in the left-hand columns indicate the proportion of reporting traffic departments that perform the various cooperative duties regularly, occasionally, or not at all. Since these results came from leading traffic executives, it is obvious that the average traffic department can be developed to a much greater extent if management will tap the potential in this cooperative area.

Traffic and the Executive Department

More and more business directors are seeking traffic's advice in top-level decisions. Traffic has a vital role to play in selecting new plant or warehouse sites, advising on siding or other agreements with carriers, facilitating transportation of executives, and production planning. Table 2 shows that only half of the departments consulted were asked advice on plant location, even though this can be one of the most significant of all traffic services.

When transportation costs constitute a major operating expense, they may be the controlling factor in plant location. Even when they are of secondary importance, transportation factors should be given some attention in locating new plants or storage sites. Various cases have been cited by traffic managers in the study in which hundreds of thousands or even millions of dollars have been saved by

TABLE 2

Incidence of Cooperative Functions of Traffic Departments in Thirty-one Firms

Percentage Reporting			Functions
R*	O†	N‡	
Executive Department			
48	23	29	Advise on plant location
90	6	4	Advise on siding and other carrier agreements
90	3	7	Arrange for transportation of executives
32	35	33	Participate in production planning
Accounting Department			
90	0	10	Audit freight bills or arrange for outside audit
93	3	4	Furnish proof of delivery to credit division
90	3	7	File claims for overcharge, loss and damage, or reparations
83	0	17	Work out credit arrangements with carriers
Sales Department			
86	11	3	Furnish rate memoranda to salesmen
61	18	21	Determine most desirable unit of sales on the basis of rates
61	18	21	Furnish rate information to aid in extension of market areas
68	32	0	Furnish information on competitors' rates and rate requests
82	14	4	Furnish rates and other information for prospective customers
54	21	25	Show most advantageous sales areas from traffic standpoint
89	7	4	Assist customers in transportation problems
61	21	18	Furnish information on warehouse location and related problems
68	14	18	Operate or advise on operation of distribution warehouses
82	0	18	Furnish data on impending rate and classification changes
14	4	82	Furnish automobile cost data for determination of salesmen's mileage allowances
Personnel Department			
83	0	17	Facilitate passenger movement of employees
87	0	13	Handle transportation of household effects for employees
Purchasing Department			
80	7	13	Show most advantageous purchasing areas from traffic standpoint
57	23	20	Furnish information on most economical size of purchase
67	7	26	Work with purchasing to consolidate LCL shipments
63	10	27	Assist in preparation of contracts where terms affect traffic
87	7	6	Furnish information on impending rate and classification changes
Manufacturing Department			
60	4	36	Suggest improved methods of materials handling
73	4	23	Advise on package specifications and packing
33	30	37	Advise on materials handling equipment
67	23	10	Prescribe or advise on operation of shipping and receiving departments
90	3	7	Maintain a steady flow of inbound and outbound traffic
13	23	64	Advise on product design
50	23	27	Advise on warehousing
Legal Department			
83	2	15	Prepare rate case evidence
90	1	9	Prepare loss and damage claim evidence
86	2	12	Appear before rate committees and regulatory bodies
79	0	21	Advise on preparation of contracts for transportation equipment
Advertising Department			
56	4	40	Advise on descriptive matter on packages and in advertising literature with respect to classification probabilities
41	2	57	Place adequate advertising on company-operated transportation equipment

* – Performed regularly.
† – Performed occasionally.
‡ – Not performed.

SOURCE: *Author's research.*

selecting plant sites where transportation costs can be reduced to a minimum.

There are additional ways in which traffic can assist the executive department. Some traffic men said they were consulted in setting sales and pricing policy. The vice-president of finance in one Indiana firm stated that for years their president wanted to quote one delivered price for their product. Transportation costs had to be reduced to an average and watched continually to make sure that the national price allowed enough for this ingredient of cost and still remained competitive with similar products sold on an F.O.B. point-of-origin basis.

Traffic and Purchasing

One of traffic's most important services to purchasing is analysis of rates to indicate advantageous sources of supply. There is no merit in saving $3 on a ton of raw materials and losing $4 on transportation costs. This involves more than an examination of transportation costs for present sources of supply. Several traffic departments point out that they opened up entirely new supply regions simply by discovering favorable rates from these areas. (Note that 87 per cent of the departments contacted in the survey aided purchasing in this manner.)

Traffic and Sales

Cooperation between traffic and sales is a fundamental area of service. The potential scope of traffic's sales duties can be gathered from Table 2. In many firms, these two divisions work on common problems as a tightly knit unit. Added customers and profits are the result. The geographic size of markets can be increased through this type of cooperation. Transportation costs definitely limit the geographic size of markets and influence the organization of sales into divisions and district offices. Where sales departments tell the traffic manager that some markets or customers have more potential than others, traffic can concentrate its efforts on freight to those particular points or areas. Many traffic departments regularly make territorial or national analyses of transportation rates to various selling areas at the request of the sales department.

Although these tasks may demand more skill and innovation from traffic personnel than the routine primary functions, the dividends for the company are well worth the extra effort. The returns in this phase of traffic's work are limited only by the ingenuity of the traffic manager and the desire of the sales department to enlist his help.

Cooperation with Carriers

At first glance it might appear that the interests of industrial traffic departments are diametrically opposed to those of the carriers. However, a growing number of traffic executives realize that through cooperation with suppliers of transportation, they can help reduce carrier costs and thereby lower their own expenses. The following statement by a traffic manager typifies this statesmanlike position:

> ". . . we do not encourage freight rates that are not compensatory to the carriers, as we feel this constitutes a destructive practice, which would eventually be injurious to our own business as well as to the industry as a whole."

Cooperation with Customers

Traffic services performed in cooperation with customers offer a source of good will virtually untapped by most businesses. Traffic must ensure that it is sympathetic to the interests of customers as well as to the interests of its own firm. Some traffic departments provide customers with routing, classification, and carrier selection, even though the terms of sale are such that the customer pays the freight bill. Others send out educational booklets on the services they can supply buyers. By the same token, customer cooperation is crucial for successful control of the physical stream of goods from the shipping docks. The final test of traffic's performance on the distribution side of its work is customer satisfaction with delivery speed, quality, and cost. Customers afford a unique source of information for the director of the traffic department.

COST AND PRODUCTIVITY

The following statement made in answer to a survey of traffic managers emphasizes the unfortunate truth that countless business executives know very little about transportation expense.

> "It is strange that such a large segment of business management does not understand the possibilities for economies and improving customer service that are available to it in the field of transportation. Of course, there are certain industries that have always understood these things, and because of this awareness have been able to obtain advantages over a period of years which are not enjoyed by those who have been less observant and understanding. Even at the present time, the heads of many companies seem to regard freight rates and costs as something fixed by governmental decree and resign themselves to the payment of whatever is charged them."

One explanation of this fatalistic attitude may be that many shippers assume they are powerless when truckers or railroads raise their rates. Yet, expenses incurred within the plant are scrutinized continually. Some firms ignore transportation expense simply because of their particular accounting policy. For example, transportation costs are often merged with the cost of purchases or with selling expenses. They are completely concealed, and no attempt is made to separate them for control purposes.

Firms selling F.O.B. factory usually ignore transportation costs entirely. They explain that the customer thereby can control his own freight bill. He may well do just that and very likely may change suppliers because of high freight bills. Customers compare final product prices rather than mill net costs. Thus, at least three factors—lack of knowledge concerning the possibilities for control of transportation costs, accounting practices, and sales terms—are responsible for the misconception that there is no need for transportation management.

How substantial are these hidden transportation costs? Twelve of twenty-seven firms that supplied cost data for this study have transportation expenses of over $1 million. The range was from $155,000 to $48 million, and the transportation/sales ratio ranged from 0.4 per cent to 25.2 per cent. But the company with the lowest ratio had an aggregate transportation bill of $200,000—obviously large enough to warrant considerable management attention.

In 1957, *Dun's Review and Modern Industry* conducted a study revealing transportation/purchase ratios from 0.0008 to 312.3 per cent.[1] The low ratios occur in the case of firms with very high-value goods, while the other extreme is characterized by firms consuming large volumes of low-value, bulky goods such as coal, ores, or sand and gravel. The high ratio for outbound goods was 50 per cent. These ratios frequently understate the role of transportation costs since most firms do not separate such costs from other expenses. In any case, they clearly demonstrate that the needs for good traffic management vary widely among individual companies and that, in many instances, transportation costs are so high that only a poorly managed firm will let them seek their own level.

Productivity

The productivity of a traffic department is composed of the monetary returns plus total services that it provides. Many departments defray most of their administrative expenses through direct savings. One traffic manager states:

> "Rate reductions, etc., negotiated by our traffic department saved $100,000 and helped in a major way to keep our plant competitive with other manufacturers in our markets."

Following is an example of returns from consolidation of shipments into full loads:

> "1. Consolidation of inbound tonnage and outbound shipments produced savings of $50,000 last year.

[1] "How Companies Spend $50 Billion to Move Goods," *Dun's Review and Modern Industry*, LXIX (June, 1957), 68.

2. Centralized shipping from_____ via pool cars, stop cars, and trucks saves $200,000 per year."

Operation of private equipment under some circumstances yields important major cost reductions. Direct dollar savings are often impressive but are a poor measure of traffic's productivity, although they are widely used by top management as the sole criterion of successful operation. Two shortcomings of this system are the difficulty in valid computation of savings, and the fact that it usually emphasizes the least important part of traffic's work. The monetary value of cooperative services, such as expansion of sales markets or provision of a reliable materials flow, defies computation. Nevertheless, it may well be the prime reason for establishing a traffic department. One traffic manager states that too many corporate presidents expect traffic to "pay its way." This encourages traffic executives to stress the aspects of their work producing identifiable dollar savings and discourages emphasis on traffic services that are more rewarding in the long run. It also encourages "padding" the savings account.

THE FUTURE

The rapid expansion of the scope of traffic management and the recent strides toward professionalization have made the decade of the 1950's an epic one in this field of industrial management. The 1960's promise even more exciting things. The traffic manager is undergoing a metamorphosis into a distribution manager. In the past, he simply ordered freight cars and prepared bills of lading. Then his functions mushroomed into all of the facets of acquiring better, cheaper transportation service for his company. More recently, he has become firmly integrated in the company organizational structure with his many staff services to other departments and has moved rapidly toward the position of a chief executive.

Now, an even bigger step is being taken with the development of genuine distribution management. Packing for shipment, materials handling, inventory policy, plant and storage location, and warehousing are inseparably linked with how goods are shipped and the costs of shipping. Far too many managers in the past have made decisions at the departmental level that might have reduced packing expenses or freight costs but that raised total physical distribution expenses. No decision affecting one of these distribution functions can be made without influencing the others. Single management responsibility for the whole range of physical supply and distribution affords the only way to ensure genuinely optimal decisions. More and more firms are integrating these basic distribution operations under one department. For the first time in history, American industries are applying the same type of centralized management to the flow of their goods to and from their plants as they have traditionally used in production.

Many new techniques of mathematical programming are developing that will make it possible for one department to rationally appraise all the variables that affect costs of product flow. The capacity of electronic data processing equipment is one of the answers to the prayers of traffic managers who know the real costs of unco-ordinated decision-making in this realm. Improved efficiency through distribution management at once presents both a major opportunity and a challenge to the businessman of 1960.

George A. Steiner

Civilian Problems in Surviving Attack

An astonishing portion of our resources and brain power today is dedicated to assuring a suitable national security position in keeping with world events. I assert with some hesitancy, therefore, that our position is seriously deficient.

In taking this view, I feel rather like the child in Hans Christian Andersen's fairy tale "The Emperor's New Clothes." Our position is by no means as uncomfortable as was the emperor's, but I am convinced that there are some embarrassing and downright indefensible gaps in our national security dress.

These deficiencies are in the general area of nonmilitary defense. The first concerns managerial devices and plans with which to rehabilitate and operate our social and economic system in case of a thermonuclear attack. The second relates to our obviously weak measures for protecting people and resources in the event of an attack. I put them in this order, not necessarily in order of importance, but because the managerial problems of a crippled economy have received sufficient attention from only a few government agencies.

I hope to do more than discuss what I feel to be weaknesses in our nonmilitary defense—I hope to stir people to act on the problem. From a national point of view, more thought is necessary on the problem of correcting the imbalance between allocation of resources to retaliate after an attack and measures to prepare for an attack. From a personal point of view, I

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urge scholars and professional groups to preempt areas of nonmilitary defense for methodological development and research. Our ignorance in the field is vast, the intellectual challenges are immense, and the value of a solution to the problem is inestimable.

NONMILITARY DEFENSE

Nonmilitary defense is one of three interrelated national security areas. The second consists of our international programs, which are designed to promote peace and justice in dealings with other nations, to build security and economic strength among the free nations of the world, and generally to foster a world cultural environment friendly to our society. The third includes our military forces, a powerful deterrent to enemy aggression that is able, if deterrence fails, to efficiently defend the continental United States.

What should be included in nonmilitary defense can be illustrated by a sketch of general subject matter in seven major categories.[1] It is a condensation of literally hundreds of topics that merit research, study, thought, and perhaps well-developed preattack plans.

The first category covers the war management structure. Major problem areas in this category deal with the structure of war organizations of government; how the organizations may function under various wartime conditions; how personnel may be recruited and assigned at different levels; what kinds of data-gathering systems are needed to make sensible decisions; where state and local governments, military commanders, and usurpers of power fit into a war organization; and measures to ensure continuity of government.

Next is an area relating to human resources. The problem of shelter is only one of many other issues, including questions of how a distribution system to feed survivors should be planned and administered; whether there should be labor battalions, and, if so, how they should be managed; what commodities should be stored to maintain life and health among survivors; what might be done after an attack to rehabilitate partially damaged housing; and what incentives should be used to motivate the labor force.

The third category is concerned with problems of material resources and production. Included here, of course, are the problems of determining what resources may be left after an attack; deciding what may be done before an attack to make the society more viable after an attack; and developing basic managerial problem-solving tools to help survivors. Basic in this area too, is a series of questions concerning stand-by industrial production controls and rehabilitation measures.

A fourth area treats communications, transportation, power, and essential services. Problems in this category are similar to those indicated in the third area.

The question of economic stabilization is the fifth consideration. It includes the kind of income flows that should be introduced after attack; what credit and credit guarantees make sense; what to do about insurance and other financial operations; and what should be done about taxation and government receipts and expenditures.

Sixth is an important area of civil government and public morale. Here are problems dealing with the maintenance of basic respect for and submission to legislative, judicial, and civil authority under chaotic postattack conditions as well as problems of judicial and local administrative functioning, internal security matters, and understanding of what is likely to happen to people psychologically.

[1] For other descriptions, see Executive Office of the President, Office of Civil and Defense Mobilization, *The National Plan for Civil Defense and Defense Mobilization* (Washington: U.S. Gov't Printing Office, October, 1958). See also William H. Stead, *A Program for the Nonmilitary Defense of the United States, A Special Policy Committee Statement, and The Tasks of Non-military Defense and the Present Status of Planning* (Washington: National Planning Association, May, 1955).

The last area covers relations with allied, friendly, and neutral nations. It includes problems dealing with the level and nature of post-attack military and economic aid to other nations, and vice versa; economic and political actions in concert with other nations; concepts and standards of financing and credit extension; two-way movement of persons after attack; and the flow of information to the world at large.

Nonmilitary defense covers far more than what is usually included in civil defense or mobilization of nonmilitary resources. Emphasis must be placed on problems of a potential thermonuclear war. Planned actions for such exigencies as a limited war, a "brush fire," or other conceivable types of conventional war must naturally be integrated into preplanned actions covering a thermonuclear war. This problem creates two new dimensions to mobilization thinking—interweaving mobilization techniques suitable for a limited war into actions that might be prudent in the event the war spreads, and deciding what these prudent actions ought to be. In both instances, our past experience provides little guidance. Indeed, past experience may misguide.

No one who has thought about the problem assumes that static planning, which results in a variety of "shelf plans," is likely to be very helpful. Program plans in this area will surely undergo evolution and refinement in the years ahead. For example, stand-by managerial procedural tools certainly should be changed and modified by testing and experience to incorporate new methods and cast off less effective measures. Research and plans must also reflect changing foreign policy and weapons systems technology.

Nonmilitary defense is not a problem for just one agency of the federal government; it is a problem for many agencies of government —civilian, military, state, and local. Private industry and individuals in all walks of life must participate in order to achieve effective results. One of our major problems is to assure the stock-piling of usable ideas and thoughts of imaginative people in many businesses and professions.

UNRESOLVED PROBLEMS

Simply because the Office of Civil and Defense Mobilization has been charged with responsibility for our readiness program, it should not be assumed that all the problems of nonmilitary defense are well on the way to being solved. The OCDM has made great strides, but virtually hundreds of uncharted problem areas remain for research, plans, and action. This is neither the time nor the place to question why a political democracy always insists on giving its enemies undeserved advantage. The OCDM is the unfortunate inheritor, not the maker, of this irrational tradition.

For scholars and professional groups, there are few fields that promise greater returns for time, effort, and money costs of research; few problems pose greater intellectual allure or invite a wider variety of tools of analysis and disciplines for solution than the area of nonmilitary defense.

The question of physical protection of people and resources has received more general attention than all other problems of nonmilitary defense combined. Yet it is not solved. Proposed shelter programs have gone through many stages, reflecting changes in weapon yield and methods of delivery, changing strategies, new knowledge about blast effect and radiation, technical construction research, and periodic high-level budget jitters. But a few elements of the problem seem pertinent for further analysis.

Shelter Programs

Today, there is little question about the adequacy of our technical knowledge concerning a shelter program. In 1958, the National Academy of Sciences dealt with this problem in a pamphlet entitled *The Adequacy of Government Research Programs in Non-military Defense*. It concluded that "adequate shielding is

the only effective means of preventing radiation casualties. . . . Postponement of basic shelter construction is not warranted in our judgment by any lack of essential technical knowledge."[2]

Herman Kahn and his associates at RAND Corporation last year completed a pathbreaking *Report on a Study of Non-military Defense,* which helps to answer the problem of the protective value of a shelter program. This study concluded that some of the protective systems examined "seem to be capable of saving tens of millions of lives in the face of conceivable enemy attacks, and of preserving a foundation for meeting long-run radiation hazards and for post-attack economic recuperation."[3] To anyone assuming even a low probability of a thermonuclear war, this is a conclusion of great importance.

Understandable reasons for our past failure to take positive action in shelter construction are fast disappearing. It seems strange that we prepare with a mighty seriousness to retaliate militarily if attacked, but do little to protect our population from blows that penetrate our military defenses. If it is not already too late, we need a substantial crash research program that will carefully evaluate costs of different protective systems, the relative efficiencies of preferred systems, and comparisons of these systems with existing alternative uses of our resources—all in relationship to combinations of probable enemy destruction capabilities. This certainly seems to be a minimum undertaking in which operations research tools and technicians outside government may well make an important contribution to national endeavor.

The purpose of such research is not to determine whether we need shelters and other protective systems. Events have dictated that decision. The problem now is when and precisely what should be done to achieve an acceptable balanced shelter program.

Recuperative Powers

The potential speed and strength of economic recuperation following an attack is an area of study closely associated with the problem of shelter. In the past, attention has been given almost exclusively to destruction during a thermonuclear attack. Only recently have the potential revival rates of a shattered economy been probed. Studies made by Kahn and the Stanford Research Institute give solid reason to expect that moderately heavy attacks will still leave a productive base from which a surprising revival of gross national product may be expected.[4] This, too, is a conclusion that, if true, is of cardinal significance.

The subject demands deep and careful study. Many unknowns must be measured, related, and balanced in developing a useful model of what might be expected—what resources will be left under different bomb damage assumptions; what the probabilities are for these assumptions; what end product can be expected from the types of broken production chains; how long it will take to repair different types of broken production chains; how such production complexes translate into GNP; what are reasonable investment versus consumption patterns and their impact on GNP. It is easy to add to this array. Reasonable models of postattack rehabilitation patterns not only could serve as an important ingredient in a shelter program decision but would also be highly useful in determining precisely what measures taken before an attack will have the greatest pay-off.

Behavior Under Attack

In need of study is the area of responses and leadership of people individually and in

[2] National Academy of Sciences, *The Adequacy of Government Research Programs in Non-military Defense* (Washington: National Research Council, 1958), p. 1.

[3] Herman Kahn and others, *Report on a Study of Non-military Defense* (Report No. R-322-RC; Santa Monica, Calif.: The RAND Corporation, July, 1958), p. 43.

[4] *Report on a Study of Non-military Defense,* especially Chapter IV, "Recuperation of the Economy."

groups under stresses of major attack. We have research findings available on human behavior in disaster and other extreme situations, but there are wide gaps in our knowledge of individual and group actions under conditions of threat, danger, isolation, and deprivation. We do not know enough about reactions of different ethnic and personality groups under conditions of great stress, or the impact of stress on major social attitudes, or responses of individuals to organized law and order under attack conditions. Research in such areas has vital significance. For example, we should know basic thought patterns, ideas, institutions, and values that have been outstanding in the past in preserving our democratic free-enterprise system. Once summarized, the concepts should be examined to determine the impact on them of a nuclear attack. From this study, it should be possible to determine a little better what conditions will assure—to a reasonable degree—survival of our traditional basic social patterns.

A series of problems, centering around continuity of government, challenges the best thinking of political scientists, economists, and management experts. Who is to take charge and under what circumstances? How will different levels of government be interrelated? What should be the nature and structure of an organization to manage resources following an attack? What should be done immediately following an attack? How can a transition be made from necessarily hasty to more orderly decisions? How far can one go in making ready the structure and personnel for government operation following an attack?

Supplies of Essentials

Our present stock-pile policy, built on experiences in World Wars I and II, is under fire. But change comes slowly. During the past few years, several government agencies have spent much time and effort in preparing a defensible list of survival items that includes a minimum number of commodities deemed absolutely indispensable to preserving life following an attack. In light of this list, what should be done about the billions of dollars of basic materials in our present stock pile? What should be the dimensions of acquisition of survival items? Is it better to stock pile? If so, where? Or should production facilities be protected instead? Can we depend on scattered inventories in the productive pipeline and on retail shelves? How should these items be distributed following an attack? How are administrators in partly damaged and isolated areas to get and use these items?

Tools for Decision-Making

In a somewhat similar area are problems of reconstructing heavily damaged plants. Local people probably will strive to rebuild and restore plants in their area, but this might not make much sense. Research should lay a foundation now for criteria about such matters as rank-ordering of facilities in terms of post-attack essentiality; feasible rates of rebuilding; possibilities for simplifying processes and plants for easier rehabilitation; techniques for cannibalizing surviving facilities; techniques to break bottlenecks in capital goods replacement; and measures applicable to abandon-or-reconstruct decisions.

A problem cutting across many areas is the list of "trigger orders" for use on Mobilization Day that will go into effect automatically upon attack. What orders should be in such a list? How should it be drafted and publicized? Should there be a predetermined timing of individual items to go off like a string of firecrackers? How does such a listing relate to expected government organization, a communications system, and the character and timing of attacks?

Decisions rest on facts, and the better the fact-gathering techniques, the better the decisions will be. What sort of data should be gathered at what periods of time following an attack for what levels of authority for what major

decisions? What type of data should be gathered today and kept up-to-date for use in local and regional headquarters? Should inventories of survival items in local areas be prepared? This would be desirable but would be prohibitively costly. How can the problem be solved by sampling techniques?

This is only a small sampling of nonmilitary defense and major research problems in the field. Not one of the problems mentioned is fully solved. For every one given, it would be easy to ask ten more. Some of the problems are being investigated by OCDM, other government agencies, universities, and private research organizations. But the research mountain remains to be climbed.

BALANCED DEFENSE

I have held to the last what I consider to be the most important problem of all—the imbalance existing between military and nonmilitary defense programs. This imbalance is framed in the budget picture. An annual budget of about $40 billion to implement a policy of massive retaliation if attacked compares with a budget of only millions for nonmilitary readiness to receive an attack. Redressing the balance is probably our greatest current nonmilitary defense problem.

There are thoughtful people who reason that nonmilitary defense is not only of low priority but is probably a waste of time. One view is that technology of modern weapons makes problems of economic mobilization and civilian defense unimportant. A thermonuclear war, it is said, will be fought with the weapons on hand and fortunately will be over quickly, with the warring nations ending up as piles of ashes. Others think costs of nonmilitary defense are so prohibitive that to undertake them will visit greater ills on our society, while still others have faith that a thermonuclear war will never occur, either because of our deterrent military strength or for other reasons known only to the aggressor nation. In this light, why bother with nonmilitary defense? Any imbalance between the two is rather irrelevant.

Such reasoning at this juncture of history seems nonsensical if we look at a different set of assumptions. Of fundamental importance is the fact that the United States has made a decision against any form of preventive war. This decision did not grow from a great public debate, but it nonetheless has widespread acceptance.

This decision, of course, leads to many policy imperatives and risks. One outstanding obvious risk grows from the fact that we no longer have assurance of getting in the first blow. Deterrence, therefore, must be a major element of our strategy. But deterrence can fail. A national policy based only on the assumption that it will not fail is hardly a responsible one.

These conclusions naturally create for us a new and high priority to assure the survival of a retaliatory military force after attack. If deterrence fails, we must be ready to retaliate. But does it not create an equal compulsion to ready our population and material resources to receive an attack?

Considering what we know about Russian capabilities, the feasibility of building foolproof military warning and interception systems, and the growing accident-prone characteristics of our world, who can conclude a zero probability for thermonuclear war? In light of the incalculable worth of preserving millions of lives as well as our socioeconomic system, who can conclude that the whole thing should be ignored?

The world of national strategy is highly complicated, but the underlying issues are clear. The time has long since passed for a comprehensive review of our resource allocations to nonmilitary defense programs. I am not advocating equal dollar treatment for military and nonmilitary programs. Nor am I assigning the same level of priorities to civil defense as, say, to protection of the Strategic Air Command. I do believe that the need to give relationships

between the two areas some cold and objective analysis is obvious.

A shelter program and accompanying protective systems may be expensive, although costs can vary tremendously depending on the degree of protection sought. It is probably not generally understood, however, that expenditures on research can be recovered many times over if the research is completed before a large protective construction program is begun. It is even less often recognized that research on the management problems of a shattered economy may spell the difference between chaos and acceptable order. Costs of such research programs are small in comparison to value and to current expenditures for national security. Action programs in both of these areas should not be delayed; action and research programs should proceed together.

I do not wish to have it inferred that I am advocating meeting nonmilitary defense expenditures by a transfer of funds from military programs. The sums needed, at least in the very near future, compare only modestly with other defense expenditures. Accepting the need for current levels of military spending, any imbalance about which I speak can be handled by additions to the budget. I am fully aware of other problems such additions would produce in the budget. But there are solutions to these questions less repugnant than failure to redress the emperor.

A MOBILIZATION INSTITUTE

Considering the great need for new and continued research to improve preparedness to manage essential war resources in the event of thermonuclear warfare, I propose the establishment of a Mobilization Management Research Institute to be financed from private sources, at least in its initial stages. It would exist outside government and remain free of control from any government agency, but would naturally cooperate with federal agencies in opening new horizons for research and in studying intensively those areas currently considered to be important in the nonmilitary defense sector.

The Government Role

It has already been pointed out that the federal government has experienced comparatively little difficulty in financing a high level of military procurement, as well as basic research and development, to meet the military aspects of the nuclear war threat. Comparatively insignificant funds, however, have been made available for basic research, planning, and concrete programs for the management of nonmilitary war resources following a thermonuclear attack on the United States.

During the past several years, concrete research and planning of great value has been undertaken by the nondefense agencies of government, particularly the Office of Civil and Defense Mobilization. This work, together with that which can be accomplished in the next half-dozen critical years, however, must be considered inadequate if existing budgets are continued at present levels or modified upward only slightly. There is little evidence that Congress will provide adequate funds for research of a fundamental nature on problems of nonmilitary defense and resource mobilization. The likelihood that needed research will be completely accomplished in government, therefore, is not promising. There is little use in rebuking this attitude—it follows a legislative tradition to provide for nonmilitary defense planning in peacetime with little conviction and support.

But even if funds were provided, there are a number of cogent reasons why much of the necessary work will not or cannot be done among government agencies. Established departments are jealous of their current roles in mobilization planning and in the event of war. They are frequently, therefore, unable to approach resource management objectively and are suspicious of work done by other agencies. In addition, their fixed regular functions tend to narrow their interests to the point where

they are incapable of broad and deep systematic research in fields lying beyond their traditional boundaries. For example, they often do not have qualified personnel to conduct the broader research, and may find difficulties in attracting such research talent.

Even without these handicaps, research in the area of nondefense mobilization resource management might become unnecessarily enmeshed in security problems if it is accomplished solely by government agencies. A substantial proportion of needed research in this field can and should be done without classified materials so that the results can be completed quickly and put in the public domain.

There is also a problem of urgency in beginning a comprehensive research program in this field. The size and urgency attached to present and prospective military budgets testify to the critical nature of the security threat facing the United States. Considerably more is known today about such underlying assumptions to mobilization research as fallout patterns, bomb yield, enemy attrition, potential target patterns, and elemental problems of resource management under conditions of thermonuclear war.

The pioneering work done so far in government agencies provides an indispensable base for a rapidly expanded research effort. On the basis of this work, the nation can pursue specific research avenues much more competently and with a good probability that results will achieve the needed preparedness level in the nonmilitary area.

There should be no problem in drawing a line between the research work to be done by the Institute and that which should be conducted by governmental agencies. There is a role to be assumed by the Institute separate from, yet in close cooperation with, the government. The government should furnish technical information and realistic planning assumptions for private groups working on mobilization problems. This need not necessarily involve classified information. In some respects, the contributions of private citizens and organizations have in the past suffered from ignorance of what they can do and from insufficient intellectual aid in getting their research tasks completed. This problem has been aggravated by rapid changes in announced planning assumptions.

On the basis of selected planning assumptions, the Institute can secure solid research studies that will help to shape action programs as well as to improve planning bases for future programs. On occasion, leaves of absence might be provided to permit knowledgeable government officials to perform research themselves and then return to their regular posts to use the results. In many studies for which facilities do not exist in government, the Institute can make sure that research is conducted in places where suitable resources do exist. If the Institute emphasizes basic research, in contrast to temporary short-run studies to meet current problems, it can provide much information that the federal government could hardly undertake under even the most favorable circumstances.

Institute Procedure

A number of possibilities exist concerning the functioning of the Institute. First, the Institute could conduct no research itself, but could provide the means for research to be undertaken outside the Institute. Second, the Institute could seek to attract scholars and practitioners and conduct research itself. Third, it could combine these two approaches. The first method seems preferable, but experience will determine the most suitable approach.

A council might control the allocation of available funds to specific research areas under any system of organization. Members of the council should represent a wide range of interests and competence in mobilization resource management. For operating purposes, there probably should be an executive committee composed of members of the council

to work intimately with a small administrative staff of the Institute.

It is recognized that problems in acquiring competent research personnel will be difficult. The entire subject of resource management under thermonuclear attack is new, and comparatively few research people have had experience in the field. In addition, the better talent outside government is occupied with other research interests. Problems would also exist in freeing government personnel to conduct uninterrupted research. Despite such difficulties, I think that sufficient personnel could be attracted to the program to accomplish the objectives sought.

Much, perhaps all, of the necessary research could be assigned to university faculty members, to private research organizations, or to government employees on leaves of absence from their agencies. There exist many private research organizations that could either undertake research or be helpful in the intellectual development of the program. Major difficulties in the past in capitalizing on the capabilities of these organizations have been the absence of technical information and realistic planning assumptions—necessary if private organizations and people are to contribute—and determining a central focal point of stimulation. The Institute could furnish them needed leadership, both directly and by relay from government, and they, in turn, could contribute to the program of the Institute.

The preferable procedure for the Institute would be to grant funds for research to people and organizations not employed within the Institute. The person or organization receiving the funds would plan the program of research assigned and select the persons or institutions for executing particular tasks. Multiple effects could be expected from such grants. A limited amount of research related to mobilization is now proceeding in universities. This would be stimulated, even when not financed by the proposed Institute. Similarly, some university courses that deal, in part at least, with mobilization are being taught, and their content and perhaps their number would be enhanced by professors' participation in research and by the published research reports' being available as reading materials for students.

All of this is particularly important as a means for developing a substantial number of younger men, both students and younger faculty, who have given serious study to mobilization problems. Younger men in industry could be stimulated in many ways to develop their competence to assume responsible managerial posts in government in the event of war. An important ancillary benefit of the work of the Institute, therefore, would be the creation of another form of mobilization reserve, ready and able to assume critical management positions beside the executive reserve of the nondefense agencies of government.

A number of research institutions outside government, financed in part by government and private foundations and agencies, are working in the area of weapons systems management, evaluation, and planning. There is no parallel in the broad area of nondefense resources management. A balance in our national security effort requires such a companion organization for stimulating, organizing, promoting, and evaluating research in the nondefense sector.

CONCLUSIONS

This article has described what I consider to be a major shortcoming in our defense shield. It exists in the lack of preparedness plans to survive and to rebuild our social and economic system following a thermonuclear attack. We know enough today to be sure that attention to nonmilitary defense can make extraordinary differences in damage to and revival of our society in the event of thermonuclear war. Until such time, therefore, as we can calculate practically zero probability of such a catastrophe, major attention must be given to our nonmilitary as well as our military defenses.

Although progress has been made in the

nonmilitary defense area, we clearly have not done enough. On the basis of what has been done under the leadership of the Office of Civil and Defense Mobilization, now is the time for a forceful program to secure the needed level of preparedness. Determined action planning with supporting research is required over a broad range of subject matter. Redress is vital in the balance of attention and resource allocation between military and nonmilitary defense areas as well as between the total of these two and other alternative uses of resources. More aggregate attention to both areas is demanded.

I am convinced that to meet these challenges, scholars and leaders outside government must become more interested and participate more widely in research of nonmilitary defense action programs. The required effort cannot and should not be done by the federal government alone.

For this reason I have suggested the establishment of a Mobilization Management Research Institute, separate from but cooperating with the federal government, to assume a high responsibility in stimulating required research, study, and discussion in this area. Costs of such an Institute would be negligible compared with its value. This Institute, with the federal government, could overcome the deficiencies discussed in this article.

The measure of success in securing an adequate nonmilitary defense position may be the saving of tens of millions of lives and the probability of a remaining viable social and economic system in the event of thermonuclear war.

THEY [the early Romans] made war not only upon soldiers, but upon an entire population, men, women, children, and slaves. They waged it not only against human beings, but against fields and crops. They burned houses and cut down trees; the harvest of the enemy was almost always devoted to the infernal gods, and consequently burned. They exterminated the cattle; they even destroyed the seed which might produce a crop the following year. A war might cause the name and race of an entire people to disappear at a single blow, and change a fertile country into a desert. It was by virtue of this law of war that the Romans extended a solitude around their city; of the territory where the Volscians had twenty-three cities, it made the Pontine marshes; the fifty-three cities of Latium have disappeared; in Samnium, the places where the Roman armies had passed could long be recognized, less by the vestiges of their camps than by the solitude which reigned in the neighborhood.

—*Fustel de Coulanges*
THE ANCIENT CITY

Case Study:

A FAMILY COMPANY CALLS FOR HELP

Paul J. Gordon | *Nathan L. Silverstein*

EDITOR'S NOTE: *The following case gives you an opportunity to try your hand, if you will, at diagnosing key problems in a real company. We suggest that you read the case and reach your own conclusions as to the problems and their solutions. Then read the comments by Professor Silverstein and Professor Gordon. Their remarks, of course, are not intended to be indisputably "right" solutions; a given problem may be handled satisfactorily in many ways. Rather, we hope that these comments shed intelligent insights into key problems and that they suggest a method of analysis, as well as feasible solutions for the firm as it plans for the future. Indeed, you may find yourself quarreling with some of the comments, or you may discover significant insights in the case that you believe have been overlooked. If so, please let us know.*

The "Laxon Company" involves an actual company; to prevent any violation of business ethics or good taste, all identifying features have been changed. The names of persons, organizations, and products are camouflaged for this presentation. In all other respects, the case involves a true business situation.

You may wonder why the editors chose to experiment with this case in Business Horizons. *The company's problems are common to a great many family-owned businesses and small businesses; some of them are of importance right now in a number of firms, and so their solutions will importantly affect these firms as they move into the decade of the sixties. Decisions today must be made in the context of tomorrow; also, we want to give our readers a little change in pace from the traditional approach. Your reaction will determine whether this experiment is a success and should be repeated.*

About the company

INCORPORATED in 1948, Laxon, Inc., a Midwestern firm, began business with the production of a tractor-mounted sprayer, built for low-cost operation. In recent years, production has been centered around a self-propelled, high-clearance sprayer and duster called the Quick-Spray. To meet the tilling needs of suburban dwellers, a rotary tiller called the Ro-Til also has been introduced.

In addition to its manufacturing operations, Laxon, Inc. functions as a wholesale distributor of farm chemicals, insecticides, and fertilizers in a three-state area of the Midwest. The company also operates a retail garden store at its home office. For the company's fiscal year ended March 31, 1959, net sales from all operations aggregated $1,838,340.

THE COMPANY

Development

As a young man recently graduated from high school, John Laxon was impressed with the serious weed problem in the river-bottom corn fields near his home. Chemical spraying seemed to be the best solution, but the sprayers then developed were high-pressure units designed primarily for spraying orchards.

Laxon first developed a workable low-pressure tank sprayer that could be attached to the back of a tractor and used effectively for spraying the weeds in and between the corn rows. He then developed the Quick-Spray to fill the farmer's need for a high-clearance, self-propelled sprayer that could straddle the rows after the crop's growth precluded the use of tractor-mounted spraying equipment.

One of the major features of the Quick-Spray was a low-cost pump that Laxon developed to control the feeding of the chemicals from the 150-gallon tank into the sprayer boom. Although the idea for the product was sound, the introduction of the Quick-Spray at that time proved premature because its design contained some serious flaws. Laxon enlisted the aid of men from the engineering staffs of its larger suppliers. With this help, he was able to eliminate the more serious defects.

At first, production of parts was parceled out. Gradually, the company acquired its own facilities for manufacturing, and in 1955 leased its present quarters, a building that previously had housed an automobile agency and service garage. This building contains 33,000 square feet of floor space on one floor. The lease agreement, running until 1965, provides for rental payments of $1,000 per month, plus 2 per cent of any future annual increases in sales volume. Experience with Double-O tillers sold in the retail store led to interest in the Double-O Company of Cleveland, whose manufacturing assets were acquired for $50,000. Mr. Laxon evaluated these assets at close to $250,000. The inventory and equipment were moved to Laxon's home base, and the company, although completely inexperienced in that field, found itself in the garden tiller manufacturing business. Laxon soon found that the Double-O tiller was not properly engineered to meet market needs. Out of this experience, the company developed the Ro-Til rotary garden tiller.

Company Organization

As of August, 1958, the board of directors of Laxon, Inc. was as follows:

John Laxon, President and General Manager
Ann Laxon (Mrs. John Laxon), Secretary
Jeffrey "Pete" Laxon, Treasurer, Comptroller, and Production Manager
Thomas Ott, Vice-President
Charles Laxon, Inactive
William Carter, Sales Manager
Bert Simmons, Attorney

Pete Laxon had been a professional baseball player before joining the company in 1948. He is a high-school graduate. Since the company has no personnel department, Pete handles interviewing and hiring in addition to his other

duties. Charles Laxon, the father of John and Pete, has not participated in the affairs of the company other than to endorse notes to enable the brothers to secure term loans from the bank. William Carter, a chemistry graduate, joined the company for summer employment in 1949, expecting to take a position in vocational agriculture that fall. His interest in the development of the Quick-Spray caused him to change his mind and accept the full-time position of sales manager. In 1950, Carl Holman, a former agricultural consultant to a large chain retailer, was employed to manage the chemical wholesaling division.

In 1957, Thomas Ott, who has an M.B.A. degree, purchased $55,000 of 5 per cent debentures of 1977 from Laxon, Inc., as well as a 20 per cent equity in the capital stock of the company. The office management and accounting functions are the responsibility of G. B. Cinciano, an accountant who joined the company in 1951 upon graduation from a local college. He reports directly to Pete Laxon and Bill Carter. The purchasing and cost control functions are in the hands of Henry Bixler, who joined the company in 1956 after 30 years' service with International Harvester Company. The plant superintendent is Ralph Martin, who joined Laxon, Inc. in 1957 after 21 years' experience in steel manufacturing.

In evaluating their management organization, John and Pete Laxon believe that the company has acquired a nucleus of key managerial people sufficient for Laxon's future growth, that these men are all good team workers, and that no managerial changes should be required in the foreseeable future. They want their managerial staff to assume increasing responsibility. Pete, for example, would like to transfer more of his duties to Bixler and Cinciano. Bixler, however, has been reluctant to accept new responsibilities because of his belief that his work in purchasing and cost control is more important than any new assignments he might receive.

No major policies or objectives of the company have been placed in writing, and no organization manual has been prepared. Since the company officers work in close proximity, no scheduled staff meetings are held. Instead, department heads talk over their problems informally.

Competitive Situation

By 1958, the Quick-Spray, the pioneer in spraying units of its type, had built an excellent record of performance and, despite competition, was considered by Laxon, Inc. officials to represent *the* brand name in the field. "We sell more of this type of sprayer than all our competition put together," says John Laxon. In this phase of the business, Laxon, Inc., which holds no patents, faces competition from other sprayers. Also of competitive importance is the fact that 80 per cent of the cotton crop is still sprayed or dusted by aircraft.

While Laxon, Inc. faces numerous competitors in the garden tiller field, company officials are confident that this part of the company's business will grow steadily. The company faces little direct competition in its wholesaling lines.

MARKETING

Sprayers

Distribution System. In 1958, Laxon sprayers were sold through the dealer organizations of thirty-nine chemical distributors. These distributors receive a discount of 20-20-5 per cent off list prices, and their dealers receive 20-5 per cent discounts. Sales to Latin American countries are made through an export agency in New York.

Concerning the sales force, John Laxon says: "All the men are on a straight salary. We know that isn't good, but they must jump around a great deal. If you don't have any boll weevil in Mississippi this year and things are hot out in Texas, the man in Mississippi will head for Texas to help that fellow out there. The weather has a lot to do with it. No limit is set on a salesman's expense account; these are averaging $70 per week per man. We haven't assigned any quotas, and we haven't asked the

men to submit any written reports other than a weekly history."

Sales Forecasting. Because of many uncertainties and the lack of substantial experience in the various market areas, sales forecasting is difficult for Laxon, Inc. John Laxon explains what is done as follows: "Since we always try to start production by the first of the year, we sit down—the whole group of key people—and go through the history of all the different distributors and simply try to calculate what they'll sell for the next year. After we set up this sales forecast, we review it about each six weeks and adjust it. Carter travels a lot, keeping abreast of developments out in the field as they come along."

No record of Quick-Spray sales has been kept by area; however, Bill Carter estimates that 50 per cent of the sales have been made to cotton and tobacco farmers; 28 per cent to corn farmers; 13 per cent to the Mexican and Latin American export trade; 7 per cent to Canadian tobacco farmers; and 2 per cent to New Jersey and New York sweet-corn growers.

Current list prices for the six models of the Quick-Spray, F.O.B. factory, run from $1,500 to $2,200. Optional equipment items are priced from $155 to $525 each; extra and special attachments list at prices ranging from $95 to $350.

Advertising. The company's advertising program consists of placing ads in farm journals and newspapers and in providing displays and direct mail materials for dealers. The company also has a cooperative plan for paying up to 50 per cent of the dealer's cost of local newspaper and radio advertising.

Sales Potential. Concerning the sales potential of their products, Laxon officials are optimistic. Bill Carter says: "We have several pieces of equipment that are bound to be good sellers. We're just beginning to scratch the surface with the Quick-Spray; for example, we know in the Lubbock, Texas area alone there must be a million acres of irrigated cotton land, and every farmer with as many as 200 acres of cotton needs a Quick-Spray because of his insect problems. While the machine will spray up to 200 acres a day, the spraying needs to be done about once a week and, when you consider rain and irrigating delays, the farmer needs one machine for each 200 acres."

Carter does not feel that the sales of Laxon products can be tied to sales of farm equipment generally until Laxon's market is more saturated. He feels that the farmer may buy a Quick-Spray in anticipation of further savings in a period of declining farm income. When farm prices and income are high, the farmer may be content to continue using aircraft spraying, even though such spraying is more costly and less effective.

Tiller Sales

Jack Wilson, sales manager for Ro-Til, estimates that sales of the Laxon tiller should reach $500,000 in 1960. Company officials believe the bulk of the market for tillers is suburban homeowners having one-half to three acres of land. Sales to a mail-order house will account for a thousand Ro-Til tillers in the 1960 season. These tillers will be sold under the mail-order brand name at a slightly reduced price; only the color will be changed. The regular line is to be marketed through hardware and garden supply distributors. There are three models, with list prices ranging from $119.95 to $224.50. A number of accessories are offered that can be used in combination with the basic power units.

Wholesale and Retail Divisions

Laxon distributes chemicals to dealers within a 100-mile radius around the home office under a protective franchise arrangement with five chemical producers. The dealers are chiefly farm implement and seed-and-feed outlets. About 90 per cent of the sales are made between April and August. The trade discount to Laxon never exceeds 15 per cent, with a cash discount of 5 per cent for 10 days, net 30 days. In addition to distributing chemicals, the wholesale division acts as the home city distributor for all Laxon equipment, and maintains the necessary over-all service and spare-parts function for the company. The sales of

the parts department provide a 50 per cent gross profit after a 50-30 per cent trade discount allowable to distributors and dealers.

The retail store operates from January through October largely through chemical and garden equipment sales. Gross sales approximate $100,000 during this period. To fill in the slack Christmas season, a line of toys is sold during November and December; sales from this line approximate $15,000 annually.

Mr. Holman hopes to reach a goal of $500,000 in annual sales for the combined wholesale and retail divisions. He thinks that when this goal is reached, this operation would need to become separated from the company's manufacturing operations. Mr. Holman thinks that the sales of chemicals and spraying equipment do not fluctuate with general farm equipment demand. He says that less than 40 per cent of the potential market for farm chemicals has been tapped.

PRODUCTION

Production Estimates

About the first of October, 1959, the Laxon brothers and Carter met and determined production estimates for 1960 as 900 Quick-Sprays, 1,000 tractor sprayers, 200 trailer sprayers, and 6,500 tillers of other models.

Production Operations

The layout of plant facilities has been designed primarily for the manufacture of the Quick-Spray sprayer. Other sprayers are assembled separately in the plant as required to fill customer orders. All parts for the tillers are being manufactured by the Ajax Steel Fabricating Company, and assembly is located in a section of a 45,000 square-foot warehouse leased by Laxon, Inc.

Plant production is divided into three main operations: machining, welding, and assembly. The permanent work force is considered flexible and, with the exception of the machinists and welders, can be shifted to various points as needed. Fabrication of parts needed for future production smooths out the seasonal effects of the business for the permanent employees. In fact, the Laxons state that there have been no layoffs of permanent employees.

Quality Control

The group leader in each department is responsible for the quality of the work that comes out of his department. There is no testing or checking on production. Pete Laxon claims that, due to the pride of the workmen in their product, the firm gets better quality on work produced in the shop than on the work produced outside the shop and assembled by the company.

Scheduling

Production scheduling is not as well organized as the volume of business might warrant. Schedules are not forecast by the week or the month, and changes in product design are made as required. Orders to manufacture may come from Pete Laxon, Holman, or others. The order slips are given to the plant superintendent and to the purchasing department.

The peak production period runs from January through August, during which time the labor force may be almost double the forty permanent factory employees. Martin receives the figures of estimated production for the Quick-Sprays only and, after determining the stock of materials on hand, he requests the necessary additional items from purchasing. During the peak period, approximately ten Quick-Sprays are produced each day.

Labor

Laxon officials believe that the company has benefited substantially, though indirectly, from labor unrest and strike activity that has been common in recent years in its area. Laxon, Inc. has had no labor difficulties. The workers are not unionized and have rebuffed outside efforts to organize them. Employment remains steady; the quit rate is negligible.

When asked how vacancies are filled in the company, Jack Hahn says: "Labor is in plentiful supply in this area, and when a vacancy

exists one of the men will say, 'My cousin Joe needs work. How about putting him on?' That is the way we've hired the men."

Laxon management believes that the wages paid are equitable and fair, and that the rates are on a par with those paid elsewhere in the community. The management further believes that no job evaluation system is needed. Fringe benefit costs are comparatively low. The company allows each permanent employee a week's vacation with pay, pays half of the group life and disability insurance premiums, but does not pay for the employees' hospitalization insurance. The employees receive a modest bonus at Christmas. A profit-sharing bonus plan was initiated recently; a bonus of $55,000 was distributed in 1959 with payments to regular hourly workers averaging about $200. In each instance, payments were made voluntarily by the company without prior announcement.

Purchasing

Certain suppliers still impose C.O.D. terms, while others now extend terms up to 60 days. Discounts typically range from ½ to 2 per cent. The company has been unable to take advantage of many of the discounts offered because of its tight cash position.

When Bixler joined the firm, he began the formulation of written material specifications. He also felt that there was a pressing need for the engineering section to submit more detailed information in its specifications for many subassemblies.

Cost Control

While the Laxons have considered the cost system too involved and intricate, Bixler feels that even the present system is inadequate. He believes that the company very likely is producing certain items at a greater expense than would be involved in subcontracting, and that certain other items are priced too low.

When a new job is started, a job sheet is given to the worker by his group leader. This sheet states the estimated time required for the job. When the worker completes the job, he fills in the time required. The sheet is then sent to Bixler's section, where it is checked to determine if the time taken is in line with prior experience for the same operation. The costs of direct materials, applied burden, engineering, and sales expense are then added.

FINANCIAL ASPECTS

The original capitalization of the corporation was $11,000, represented by 110 shares of $100 par value common stock. The preferred stock (called common stock Class B) was issued in 1959 as part of a recapitalization plan designed to broaden the equity base. In the recapitalization, notes payable to officers, previously given to officers and key employees in lieu of cash bonuses, were converted into Class A common and 4 per cent preferred stock. At the time of the recapitalization, no dividends had ever been paid on Laxon stock.

Cinciano prepares monthly balance sheets, profit-and-loss statements, statements of accounts receivable and payable, and a breakdown of cumulative operating expenses. A firm of C.P.A.'s audits the books annually and advises Laxon officials about financial operations generally.

A systematic method of forecasting cash requirements has not been worked out. Cinciano attempted to prepare a company budget for 1957 but dropped the idea when he encountered serious difficulty in estimating expenses. John Laxon would like to have an operating budget, but he has not been able to devote enough time to it to determine what its make-up should be.

John Laxon says: "We know we should have a budget. We've been having an estimate of what we need, based on the year before. Actually, what we do is think about the maximum we think the bank will lend us. We go to the bank and say, 'For the coming year, we want to borrow $250,000.' We know they're not going to give us $250,000, but maybe they will let us have $200,000. So when we get as much as we can from them, we figure our year's operations from there."

LAXON, INC.
Statement of Operations and Retained Earnings for Year Ended March 31, 1959

	Sprayer	Ro-Til	Chemicals and Stores	Combined Total
Sales	$1,409,234	$203,928	$225,178	$1,838,340
Cost of goods sold				
Beginning inventory	270,976	106,316	57,317	434,609
Purchases and freight	901,690	59,458	192,346	1,153,494
Manufacturing expense	266,611	21,357	.....	287,968
Total	1,439,277	187,131	249,663	1,876,071
Less ending inventory	465,770	38,957	84,197	588,924
Cost of goods sold	$ 973,507	$148,174	$165,466	$1,287,147
Gross profit on sales	$ 435,727	$ 55,754	$ 59,712	$ 551,193
Selling and administrative expenses				
Selling expense	$ 124,383	$ 41,421	$ 48,944	$ 214,748
Administrative expense	154,225	11,327	8,714	174,266
Total	**$ 278,608**	**$ 52,748**	**$ 57,658**	**$ 389,014**
Operating income	$ 157,119	$ 3,006	$ 2,054	$ 162,179
Other income				
Discounts taken			$ 5,597	
Interest			34	5,631
				$ 167,810
Other deductions				
Discounts allowed			$ 73,532	
Interest			22,653	
Premiums on life insurance			1,811	$ 97,996
Income before federal income taxes				$ 69,814
Less provisions for federal income taxes				31,745
Income to retained earnings				$ 38,069
Add balance March 31, 1958				61,581
Add federal income tax adjustments (prior years)				1,950
Total				**$ 101,600**
Deduct transfer to Class A common stock in connection with issuance of 5,000 shares in exchange for 125 shares				$ 68,585
Balance March 31, 1959				**$ 33,015**

Despite a series of profitable years, the company experiences difficulty in meeting the cash requirements of the steadily growing volume of preseason production. The factors contributing most heavily to this situation are the seasonal nature of sales, the relatively small capital investment, and the decline in inventory turnover. The company's net worth does not increase as fast as inventory. During 1959, temporary financing was obtained through a $125,000 open line of credit from a local bank, $50,000 through pledged warehouse receipts, and $50,000 through factor's lien credit.

In order to utilize its cash resources as fully as possible, Laxon, Inc. offers a preseason discount plan, involving an 8 per cent discount

LAXON, INC.
Comparative Balance Sheets
March 31, 1959 and September 30, 1959

Assets	March 31 1959	September 30 1959
Current assets		
Cash	$ 26,961	$ 7,573
Travel advances	900	1,400
Accounts, notes, and contracts receivable (net)	295,580	205,827
Merchandise inventory	588,924	519,378
Prepaid expenses	8,530	7,301
Total current assets	$920,895	$741,479
Fixed assets (at cost)		
Shop equipment	30,731	32,563
Store equipment	369	369
Tooling	6,745	1,688
Autos and trucks	18,732	15,817
Office furniture and fixtures	9,689	10,251
Leasehold improvements	3,764	3,764
Accumulated depreciation	(26,612)	(21,912)
Net fixed assets	$ 43,418	$ 42,540
Other assets		
Land not used in business	8,000	8,000
Cash surrender value of insurance	83	83
Total other assets	$ 8,083	$ 8,083
Total assets	**$972,396**	**$792,102**
Liabilities and Stockholders' Equity		
Current liabilities		
Notes payable to bank	$192,721	$186,542
Notes payable (others)	20,960	19,012
Contracts payable (equipment)	848	----------
Due Merchantile Discount Corp.	94,917	19,560
Accounts payable (trade)	299,618	128,789
Employees' income taxes withheld	4,030	4,430
Accrued payroll and bonuses	55,599	307
Accrued federal income taxes	32,357	70,150
Other accruals	18,416	9,431
Total current liabilities	$719,466	$438,221
Deferred liabilities		
Notes payable (officers)	32,915	11,835
Notes payable (others)	31,000	31,000
5 per cent debentures due Nov. 1, 1967	55,000	50,000
Total deferred liabilities	$118,915	$ 92,835
Total liabilities	**$838,381**	**$531,056**
Stockholders' equity		
Common Stock (Class A), 12,350 shares	100,000	147,000
Common Stock (Class B), 22,250 shares	1,000	22,200
Retained earnings	33,015	91,846
Total stockholders' equity	$134,015	$261,046
Total liabilities and stockholders' equity	**$972,396**	**$792,102**

for November payment and ranging downward for later payment. Orders that do not qualify for this special discount plan are subject to the regular 2-10, n-30 terms.

OTHER CONSIDERATIONS

Research and Development

While Laxon has constantly attempted to correct flaws that have developed in product design, the first experimental engineering and testing was done in 1957. Three of the most promising men in the shop were assigned experimental work. John Laxon has a file of his own ideas, and the salesmen frequently bring in other ideas.

By 1961, Laxon hopes to market two new products in the Quick-Spray line. The first is a four-wheel, high-clearance sprayer capable of straddling crop rows more than six feet apart. Laxon officials believe that this machine will prove especially valuable to grape and gladiola growers. Plans also call for the manufacture of a Quick-Spray, Jr.—a three-wheel sprayer with a lower, four-foot clearance, which should be more economical to operate than the standard model and which will provide the structural strength to support a tank of double capacity.

Company officials also believe that neither of the company's present product lines is fully developed, and major design changes in these lines are likely by 1961. Line standardization is a problem to be worked out. Because of their concern about losing possible sales, Laxon officials have had the policy of making custom adaptations of the Quick-Spray to fit the needs of specialized customers.

Investment or Merger Possibilities

The company cannot significantly expand production until new facilities are acquired. The Laxons state that they have received several inquiries relative to the possibility of their selling a sizable interest in their company. The Laxons are reluctant to sell at less than $30 per share, feeling that if the hoped-for additional sales materialize in 1960, the company could sell the remaining 1,000 authorized shares in 1961 for $150 per share. Another inquiry has come from a company with surplus capital and a desire to diversify.

Ott has approached the Laxons with a proposal to merge Ajax, in which he has a $60,000 interest, with Laxon, Inc. through an exchange of stock.

Sales Growth

John Laxon predicts a continuing sales growth of $400,000 in 1960, $500,000 in 1961, and $600,000 in 1962. He has estimated that, in order to reach these goals, $150,000 of additional equity capital will be needed in 1960 and a similar amount in 1961. It is impossible for the Laxon family to supply this amount.

THE PROBLEM: *This company has promising opportunities for continued growth, but it will not be able to take advantage of them unless it overcomes several obstacles. What should this small business do to regain a steady footing and continue its expansion?*

Comments *by Nathan L. Silverstein*

In the Laxon case, we have a company that has grown like Topsy. The company, founded by an individual with energy and ideas, took off without too much planning and organization as do many newly founded enterprises. The success the company has enjoyed has come about in spite of its policies and not because of them.

The company's basic difficulty, which emerges from a study of the facts presented in the case, is that there has been little planning on the part of management. This characteristic shows up in the entire operation, but is especially clear in the financial sector. Record-keeping is inadequate, and this precludes the kind of analyses necessary for proper planning.

Fundamental to production, of course, are sales expectations. The company admits the difficulty of forecasting sales, but something more could be done with adequate records and analyses than is being done. There is no indication of any attempt to get firm orders from dealers ahead of production. With more adequate information on sales potential, production could be scheduled more accurately and efficiently.

In the area of production, it appears that something of a hit-or-miss policy is followed. There is no centralized testing and quality control. Orders to manufacture come from several different individuals, with no one responsible for co-ordinating the orders and arranging for efficient manufacturing runs. Inadequate information on production schedules makes purchasing more difficult and probably more costly. Furthermore, the inadequacy of specifications for materials and subassemblies hampers the purchasing department.

No labor difficulties exist, and it is felt that no job evaluation system is needed; but both of these conditions may be changed as the enterprise grows. With the greater specialization that increased production will require, a job evaluation system will become a necessity. And a larger labor force will call for more attention to the matter of labor relations.

It is interesting to note that Bixler, who is in charge of purchasing and cost-control functions and as an employee of the International Harvester Company had long experience with its procedures and methods, finds fault with the Laxon system. He is seeking to improve the purchasing procedures and cost-control methods.

The two brothers, who make most of the decisions and upon whom most of the responsibility falls, have had no training in matters of business. One, a high-school graduate, started as a farmer; the other, also a high-school graduate, was a professional baseball player. These backgrounds are not adequate for coping with the many problems and situations that develop in the operation of a business with almost $2 million in sales in 1959, and one for which a considerable growth is projected. The abilities of other members of the management staff need to be utilized. Yet the key managerial people look to the bosses—the two brothers—to make the decisions. This results either from the failure to grant responsibility to other management men or an unwillingness on the part of the other men to assume responsibility. The future success of the company will require the delegation of responsibility to competent individuals. This may call for additions to the management team of trained and experienced individuals.

Planning and management of the company's finances is particularly bleak. Budgeting has been less than elementary, and not much thought has been given either to the financial needs of the company or to methods of raising needed capital. This—the finances—is the biggest stumbling block in the path of this promising company.

Consideration needs to be given to the prospects of the wholesale chemical and retail

Mr. Silverstein is Professor of Finance, School of Business, Indiana University.

division and to the tiller division. The wholesale-retail division had sales of $225,178 for the year ending March 31, 1959, on which a profit of only $2,054 was made. Sales in the tiller division amounted to $203,928, and the profit came to only $3,006. These performances are indeed poor. Some $430,000 of business for the two divisions must show much more than $5,000 in combined profit; otherwise they cannot be tolerated. The capital required for their operation is certainly not earning its keep. Unless the future operation of these divisions promises better performance, they should be abandoned and the resources devoted to their maintenance should be shifted to the more profitable sprayer operation.

No doubt there are other matters that might be singled out for comment. Further information about the company and its operations might alter some of the comments and highlight other problems. The one comment that will not be altered is that this company is sorely in need of thoughtful planning and improved organization if it is to successfully and profitably continue its growth.

Comments *by Paul J. Gordon*

LAXON'S success to date has been based on creative ability, technical know-how, early entry into a new field, and favorable labor market conditions in the home city. Continued growth in the foreseeable future will depend, most of all, on effective managerial planning and control. In the short run, lack of adequate cash has increased the cost of doing business to the point where profits are affected and solvency endangered. In the long run, the company cannot continue to buy, trade, and expand at its present rate without improved capital structure and more effective planning and control.

THE PROBLEMS

Cash and Capital

Financial statements provide evidence of cash and capital problems. With cash low and receivables and inventory high, the company is unable to take advantage of cash discounts. Instead, discounts are offered to others to stimulate cash payments, and interest is paid steadily to keep working capital.

Despite apparently favorable over-all return on capital, the size of the investment in relation to assets and liabilities is contributing to the present squeeze and will inhibit continued growth. Futhermore, return on investment is not the same for all lines. Operating statements reveal that sprayers are the most profitable item. Ro-Tils and chemicals and stores contribute less. If the latter items can contribute to the profitability of the sprayers, or to overhead, or to profitability on their own, they might be continued. They might be sold through a mail-order arrangement or with all-out promotion protected by patents. Otherwise, reappraisal may be in order.

Plans and Control

The facts also point up a serious need for planned programs to meet future competition on several fronts. The primary business, barring any change of basic objective, is to make tractor-mounted sprayers, including self-propelled, high-clearance sprayer and duster units. The rotary tillers, the wholesale distribution of chemicals, the retail garden store, and the sale of toys can each become unhealthy diversions.

Sharp objectives, policies, schedules, and budgets for all major phases of operation should place the company in a better position

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to meet real competition and to achieve better internal co-ordination of marketing, production, and finance. Marketing needs include basic decisions on product, price, and discount policies; definition of the product and geographic market; more information on the competition; reappraisal of the channels of distribution; research and experimentation with consumers on product design and promotion; and tighter plans for organization, payment, and control of the sales force. Production needs include master production schedules based on marketing information; centralized responsibility for production; economic analyses on what to make and buy and when to produce what quantities and qualities; and more adequate quantity, quality, inventory, and cost controls.

OBJECTIVES

Consistent with these analyses, the objective desired in the short run is to place the company in a position where strained cash and working capital will not increase the cost of doing business, threaten solvency, and hurt profits. One long-run objective, closely related to the working capital problem, is to bring equity into better relationship with assets and liabilities. The other is to improve over-all managerial planning and control. Together, these should remove blocks to continued growth; improvements in marketing and production can follow.

RECOMMENDATIONS

Cash and Capital

The ideal first step for both cash and capital problems, from the point of view of present stockholders, might well be profit improvement. Family money is limited and there are no fixed assets that can readily be sold. Further financing of receivables, especially with heavy carry-over, probably would entail quite a loss; some inventory might be unloaded at loss, but harm to future sales would be likely. Sale of stock will yield more when ratios are better. Hasty capitalization, just because alternatives are available, might result in unsought changes in the balance of ownership and control. Decreases in assets and liabilities, solely for proportion, would not do much for long-run growth.

Profits can be obtained in the short run largely through increased sales or through added short-term borrowing applied to take advantage of discounts now ignored and to end discounts now given to others. Increased sales and/or a line of credit for 1960 will take the company out of its present squeeze, provided that cash flow is properly managed and that the sales optimism of Laxon executives is warranted.

These alternatives should ease the immediate cash and capital problems, but will not be enough to provide for early expansion. If early expansion can be supported by market experience and stockholder wishes, decisions on dividend policy, value per share, and desirable balance of family control will be needed before closing any stock sales. On these, Laxon, Inc. may need full-time or part-time expert financial advice.

Plans and Control

Since more effective planning and control cannot be achieved without the proper use of information by strategically placed executive officers, the first step is to clarify objectives and align functions. The decisions that each executive must make and the information he will need will then become clear. In this company, realignment of responsibilities offers opportunity for easing executive burden, increasing control, and getting fuller utilization and development of subordinate managers. As an illustration of this realignment, marketing, production, and finance divisions could be placed under the chief executive, John Laxon. Carter might assume responsibility for marketing, Ott for production, and Pete Laxon for finance. Holman would then report to Carter; Martin to Ott; Cinciano and Bixler to Pete Laxon. Such a realignment should make the company easier to manage.

ALBERT RAVENHOLT

A Trip to Red China

EDITOR'S NOTE: *American business has passed the halcyon days when its legitimate concerns were almost entirely domestic. From now on, the business scene is the whole world; the prosperity, success, or failure of our private enterprise system will be determined in a global contest.*

In the years ahead, the most powerful challenge may come not from the Soviet Union, but from the new Asian giant, Red China. In twenty years, if the current rate of increase holds, there will be at least a billion Chinese in the world. The Chinese Communists have the openly avowed goal of dominating all of Asia with its majority of the world's people and a large part of its riches. They clearly intend to destroy every last vestige of American influence in Asia. The economic and cultural conflict will increase; and in contests like this, social orders can rise and fall.

This article is based on a letter written for the American Universities Field Staff. Its descriptions of the new China as seen by some prominent Filipino visitors—among our staunchest friends in Asia—are all the more interesting because American access to China is limited. While this article is slightly different from those usually published in BUSINESS HORIZONS, *the Editors think it reveals early stages of developments that will be of increasing concern to Americans in the next decade.*

ONE DECADE after the Communist rise to power, the long portentous shadow of Red China stretches across Asia and probes into other parts of the world. A quarter of humanity is committed under Chinese Communism, a social experiment so vast that contemporary observers have difficulty in keeping pace with its development. If the experiment works, China is destined to become a colossus of industrial and military power. The Asian looks to China with fascination, some misgivings, and deep respect for what she can mean.

Chinese influence beyond her borders is often underestimated in the West. Perhaps this is because the West tends to measure effort of this kind primarily in economic terms and by its own standards. Although China's foreign

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trade is increasing, it is far from world-power proportions; its economic assistance program in 1958 gave $15 million in loans to Asian countries. This is hardly significant compared with aid to underdeveloped areas by the United States and other Western countries. To the Asians, however, trade and loans in any amount are impressive, coming as they do from a nation that nine years ago was in abject poverty.

In the broader area of cultural relations, the Chinese are forging a new and potent tool for building international influence. The Chinese cultural offensive extends across Asia, into South America, Africa, and Europe. During recent years, writers and journalists have visited China from Finland, Portugal, Turkey, Venezuela, and the African states. Parliamentary and trade missions came from Great Britain and Japan; European Sinologists have been welcomed to conferences on Chinese language and culture.

Peking reports that its cultural programs have reached some sixty-three non-Communist countries plus a dozen Communist states. In 1956, the unofficial visitors to Red China numbered 5,200; this number does not include diplomats and numerous technicians from Russia and East European states who are working in China. In the following year, the number of visitors leveled off, but connections were established with twelve other countries not previously included in the circle of Chinese Communist contact abroad. With the first industrial fruits of the five-year plan now in evidence, the Communists are shifting toward trade fairs, market displays, and their own version of high-pressure salesmanship. Chinese Communist officials of a new type are going abroad to Southeast Asia and other regions willing to accept them—these are the hard-bargaining, and, by all accounts, incorruptible managers of government trading firms. There is a growing move to show less-developed nations that Red China has the formula for speedy industrialization. Altogether, this exchange of persons is becoming the primary instrument by which Peking extends its influence beyond the Communist orbit. The methods employed to accomplish this objective reveal not only the skill and techniques of China's new rulers but also the emphasis they have selected for courting the unconverted countries.

If understanding comes better in a familiar setting, it should be instructive to know how Peking "reached" the Philippine republic. The fact that a Filipino mission was officially feted in Peking represents an important advance from the perspective of the Communist leaders: Despite the diplomatic quarantine that the United States has labored so assiduously to maintain, direct links have been forged with one more young nation that officially abhors Marxian teachings. And the Republic of the Philippines is the strategic kingpin in the entire American scheme of defense involving the Western Pacific and Southeastern Asia.

The first mission to go from the Philippines to Red China was led by Manila's former vice-mayor, Jesus Marcos Roces. For the Chinese Communists, Roces and the other Filipinos in the group must have presented a bit of an enigma. While they staunchly refused to accept the Communist suggestion that the Philippines was in effect a province of the United States—and proved their independence by making the trip—the Filipinos also were disconcertingly irreverent before all the new gods. They rejected the myths that compose the standard Communist explanation of events in Korea and Hungary. Possibly their Chinese Communist hosts were unprepared for the casual Filipino approach to problems that are supposed to be serious and their reluctance to engage in any refined verbal dissection of issues.

At any event, the Filipinos received the courteous and meticulously designed treatment that currently is routine for visitors to the mainland. Their experiences, their attempts to "learn all" (more than the Communists wanted to show them), the impressions

with which they left Red China, all tell a revealing story of this modern version of the ancient Asian tribute missions to Peking.

COMMUNIST CONTACTS

The first contact for Roces' trip to Communist China was made when he wandered into a Manila bar searching for some of his men and fell into conversation with a visiting Chinese businessman from Hong Kong. As they chatted, Roces expressed an interest in visiting the Chinese mainland. The businessman, who seemed unusually well-informed, answered that this could easily be arranged. Roces had a second talk with the stranger and explored the possibilities further, although the discussion was still somewhat oblique. Several days later, the vice-mayor was summoned by the late President Ramon Magsaysay and asked whether he, Roces, knew that he had been consorting with a Chinese Communist agent. Roces explained his interest and added that he understood the man had left the Philippines.

Roces took his first opportunity for a trip to Hong Kong and called on the Chinese Communist contact man to whom he had been directed. "China welcomes all visitors," he was told and returned to report to Magsaysay, who advised him to go ahead. One morning a few weeks later, Magsaysay called Roces to Malacanang and said the trip was "no good." "He frankly said," Roces adds, "that the American Embassy frowned on my going. They claimed there was everything to lose and nothing to gain by my making the trip to Red China."

Early in 1957, Magsaysay again advised Roces to proceed with his trip to the Chinese mainland, provided the president was in no way publicly associated with it. All preparations for the trip had been made and the Chinese Communist representatives in Hong Kong were waiting for the vice-mayor when Magsaysay was killed in a plane crash in March, 1957. "Immediately, my plans for the visit were canceled—I felt we needed at least top-level toleration," Roces adds.

Throughout late 1957, Roces worked quietly on his proposed venture, but the Philippines was in the midst of a presidential election and little could be accomplished. Once Carlos P. Garcia, who as vice-president had succeeded to the presidency, was elected, Roces again asked permission to go to Red China. The president initially opposed the proposal and told Roces, "It will kill you politically." The vice-mayor then sought approval of the Philippine Army; he met objections until there was a change in command and the responsible officers "agreed to turn their backs on me." With this sanction, Roces returned to the president. "He promised me," Roces relates, "that I could say the president frowned upon my trip but tolerated it."

As companions for the journey, the vice-mayor selected a businessman friend and associate, a lieutenant from the Manila Police Department, and four Filipino reporters nominated by four of the five English-language daily newspapers in Manila. Although he scoured the city and government in search of a qualified interpreter, Roces was unable to find a single Filipino who spoke fluent Mandarin or had a competent reading knowledge of Chinese. At the last moment, the vice-mayor's party was joined by Filipino representatives of the Associated Press and United Press International. However, once the party arrived in Hong Kong, these two newspapermen were denied visas by the Communists on the grounds that they represented well-known American business interests.

FILIPINOS ENTER CHINA

In July, 1958, Roces and his six companions boarded the train at the Kowloon railway station, where the ferry from Hong Kong Island docks, and traveled twenty-two miles to the border station of Lo Wu. There on the banks of the Sham Chun River, which marks the boundary between the British crown colony and China, they stepped down and walked across the narrow international bridge. Porters delivered their baggage to the Chinese Tourist

Service. The seven Filipinos placed themselves in the hands of the Chinese People's Institute of Foreign Affairs, which managed their visit and paid for all their travel and living expenses while in China. They had purchased incidental spending money through the Bank of China in Hong Kong.

The Chinese People's Institute of Foreign Affairs itself merits note. Roces and his colleagues report that it handles all foreign contact with nationals of countries that maintain no diplomatic relations with Peking. The Institute impressed the Filipinos as both skilled and effective in discharging this task. During preliminary discussions in Hong Kong, the party had chosen their mode of travel and points of interest to be visited in China. Their senior host was a vice-director of the Institute, a former professor of history who apparently spoke no English. A man near fifty, he commanded respect wherever they traveled. Two men in their late twenties served as interpreters, and a younger girl representing the Tourist Service arranged accommodations and other facilities. Later, the Filipinos "ran several tests" on these four and became convinced that none spoke Tagalog, but they clearly had been well briefed on the Philippines. Initially, the Chinese were reserved and gave little but formal information, although all courtesies were maintained. However, in time they relaxed and indulged in considerable discussion of issues, including "democracy."

In Canton, Roces' local host was the vice-mayor, who gave a formal dinner during the two days the Filipinos stopped there. They were received in a comfortably large and ornately furnished Chinese home, and Roces inquired of the Chinese vice-mayor whether this belonged to him. His host was visibly angered by the question and retorted, "This is the property of the people." In the course of his dinner speech, Roces expressed amazement at the difference between his own perennial problem of job tenure and that of his host: "I am puzzled why, when I run for election in Manila, we never know the results until the votes are counted, and then I may win by 51 to 60 per cent. In China, you announce a vote margin in your favor of better than 99 per cent." With a straight face, the Chinese vice-mayor responded: "In China, the people are already educated—they know who to vote for."

Although Roces had expressed a special interest in studying the methods of municipal administration, planning, and development, the tour provided him with only a few glimpses.

> "I kept asking for the jails, and in Peking they finally showed me where they said one-third of the inmates were regular criminals and the other two-thirds were political prisoners. It was organized as a stocking factory. Later I learned they do have regular jails with cells. Their policemen are not armed, yet there is always order."

Roces remembers vividly a soccer game they attended in Peking. Between 80,000 and 100,000 people watched a team from Hungary play the Chinese champions. "When the game was over I expected a stampede, thinking what a mess such a crowd would mean at home. Instead, a woman spoke over the loud-speaker and told everyone to remain in his seat. Then they were told to leave by sections—and everybody moved as if trained."

In Canton and Peking, the Filipinos had the most frightening experiences of their entire trip—they witnessed mass demonstrations denouncing British and American "imperialist intervention" in the Middle East, which effectively incited the populace to hatred of the West. The Filipinos were told that 64 million persons participated in these rallies during a ten-day period in late July. The "echoes of a million voices reverberating throughout Canton," and the day- and night-long shouting by incensed demonstrators converging on the Tien An Men Square in Peking prepared the stage for vehement declarations of determination to send representatives of 650 million Chinese to aid their "Arab brothers." The Filipinos realized that these demonstrations were a powerful device for mass indoctrination,

and they also began to fear that the Communists were preparing for early hostilities. The intensity of the hate campaign—directed chiefly against the United States and led by actors and actresses, poets, writers, singers, and officials—persuaded the Filipinos that the Communists must be readying their people for eventual large-scale war. They concluded that no peripheral "struggle" such as that concerning the offshore islands and Formosa alone would warrant this officially sponsored expression of venom. Some members of the mission wanted to depart for Manila immediately after these exhibitions but Roces dissuaded them, although he did secure a promise from his official hosts that, in the event of conflict, the Filipinos could leave China by way of Burma.

Peking has always been a favorite city with visitors and, as the tensions aroused by the demonstrations subsided, the Filipinos also were enthralled by the ancient capital now in the process of being made over. Miles of new brick and concrete residential blocks and governmental offices were going up, and historical sites were being restored. Roces and his colleagues, impressed as they were with a new 600-bed children's hospital, enjoyed especially a leisurely trip to the Summer Palace with its well-preserved mementos of the Empress Dowager's foibles.

On a visit to Tsing Hua University, the Filipinos noted with favor the practicality of the technical training and its emphasis on China's most immediate problems. There they found American technical magazines along with other international journals and concluded "when it comes to science the Communists in China do not draw the ideological bar."

Roces spent three hours in candid discussion with faculty members at the National Peking University, including a Chinese who had studied at Columbia University while the vice-mayor was there. "They asked if the Philippine government had rejected the policy of coexistence," Roces relates, "and I said 'yes.' Then they wanted to know if we were preparing for war. When I said 'no,' they were puzzled by the contradiction." The vice-mayor bluntly inquired how they justified a regime where the people had lost their freedom: "They answered that considering China's economic condition today, the Chinese people cannot afford the luxury of freedom. A main theme of their long discourse on the history of China during recent centuries was that the people over and over again faced starvation. Only now, they insisted, was there assurance of food for everyone." Roces, who found the Chinese professors "living in the kind of houses I would like," says, "They talked about ancient Philippine and Chinese ties. They have many records about our past and they want to correspond with our professors." Faculty members also pressed Roces to arrange for an exchange of students, professors, and even basketball teams. The People's Institute of Foreign Affairs "wanted us to bring cultural groups like our Bayanihan (folk) dancers and they would pay all expenses."

COMMUNIST INDUSTRY

Everywhere the Filipinos traveled in China, and particularly on their visit to Mukden and Anshan in Manchuria, they were shown factories—some forty in all. With hardly an exception, these plants were operating with two or three shifts daily and there was a sense of urgency about the entire industrial scene. In Canton, they were taken through plants (the machinery was Czechoslovakian) manufacturing chemical fertilizer equipment, electrical machines, and a paper mill that will be geared to use pulp from the pines being planted by the millions over once barren mountain slopes. In Peking, they went through a textile mill employing 12,000 workers and found that factory housing had already been erected for one-third of these laborers and their families. The machine tool plant they visited in Mukden had been designed by Soviet experts and was managed with their technical advice. Most equipment came from Eastern Europe and Russia, although Roces was

pleased to find a few lathes from his "alma mater town" of South Bend, Indiana. Like so many Asians for whom blast furnaces symbolize the magic of industrialization, the Filipinos were highly impressed with the great iron and steel complex of Anshan where the Communists are multiplying the peak production achieved by the Japanese during World War II.

Later, in Shanghai, they toured a gauge and meter factory and a plant making switchboards for telephones and railways. The fountain pen factory, producing daily thousands of copies of Parker 51 pens, intrigued the Filipinos. One of the reporters from Manila produced a Parker 61 pen, which the Chinese had not seen before; but he is of the belief that they will soon be reproducing it. Although Chinese-made consumer goods were restricted to a few selected items and design was simplified, the Filipinos found no crudeness in the manufacture. Rather, the Chinese seemed fully capable of transferring to industrial effort their traditional skill in handicrafts.

In most plants the Filipinos visited, they were greeted by a manager who appeared to be more of a political than a technical specialist. Many started their conducted tours with a similar introduction: "I wish to welcome the Philippine visitors. With your permission I will now give a brief history. Before Liberation this factory was in the hands of Chiang Kai-shek's agents and the workers had no incentive to produce. Today workers own the factory, we are producing for a new China, and we have multiplied output." The factory restaurants impressed the Filipinos—food was simple, but clearly healthful and inexpensive. And payment was made on the honor system. Each customer placed his money in the same basket from which he took change. "If we did that here at home," Roces remarks, "there would be very little cash left in the basket."

For the Filipinos, who in Spartan China missed the bars and neon-lit night life of Manila, Shanghai held another memorable experience. They met a "reformed capitalist" and were offered by him their only drink of Scotch on the entire trip—"it was 'preliberation stuff.'" As a "progressive industrialist," his factories were being purchased by the government through seven annual payments, each amounting to 5 per cent of the appraised value. He was required to invest these funds in government bonds paying 8 per cent interest yearly. That portion of the interest over and above "modest living needs" he again had to reinvest according to government provisions.

China's developing transportation system caught the travelers' attention. In the Philippines, controversy had been aroused by the emphasis on building costly American-style highways carrying cars and trucks that burn expensive gasoline. "The Chinese were more practical," Roces has concluded.

> "They studied their problem and found they had comparatively little oil now available, so they gave secondary priority to roads. With very few exceptions, the highways we saw were unsurfaced, rough, and hand-built. There were few cars and these were imported from Europe. But we also saw the latest models of American cars in Peking and Shanghai. In fact, we saw one Dodge that was an exact mate for the car the city provides me here. It was being disassembled in Shanghai; they were making wooden forms and planned to copy that model in their factory."

Railways, on the other hand, were being rapidly extended into the hinterland and improved. Trains were fast, punctual, and clean. The "soft sleeper" in which the party traveled for sixteen hours from Manchuria to Peking had been built in Czechoslovakia. They observed that while their fellow companions in the first-class coach were an elderly Chinese couple and another touring group from French Equatorial Africa, the Russian technicians on the train traveled second- or third-class.

The only part of the journey the Filipinos had pressed upon them by their hosts was a visit to Wuhan, a major Central China port on the Yangtze River. Here the Communists took pride in showing off their new steel complex

designed to supply the regions reached by this largest of China's waterways. The massive bridge the Communists constructed to span the Yangtze at Wuhan is among the shrines of the new order. When a Filipino reporter asked why guards were needed on such structures, he was told there still were agents of Chiang Kai-shek about.

A visit to the Chinese Committee for the Promotion of International Trade had been arranged when the Filipinos returned to the capital, and the secretary-general loaded them with an assortment of elegant brochures on available exports. The Chinese wanted to sell not only tea, silks, herbs, and other such customary products but also offered machine tools, lathes, diesel engines, power pumps, air compressors and pneumatic tools, electrical equipment, and many other items. In return, the Trade Committee representatives expressed a keen interest in buying copra and sugar.

A trip to the Great Wall left the Filipinos with the same sense of awe for China's past experienced by so many visitors. This feeling was fortified by the hours they spent touring the restored Forbidden City whose tile roofs, carved lions and dragons, and red-lacquered pillars all shone with the gleam denoting scrupulous maintenance. The Ming Tombs Reservoir, built last winter by brigades of workers, including "hundreds of thousands of volunteers" from Peking offices, made the visitors aware of how much latent human energy went unused at home; but it was their only good look at the present nationwide use of the *corvée* by the Chinese to speed their ambitious public works.

THE COMMUNIST ELITE

When they first arrived in Peking, the Filipinos asked for an interview with Mao Tse-tung, the Chairman of the Central People's Government, and with Chou En-lai, the Premier. Roces and his colleagues repeatedly inquired when they might see the Chinese leaders, and each reporter in the group submitted two written questions. The response of their hosts was always, "We shall inform the authorities."

The Filipinos had begun to fear they would return home without this prized climax to their trip when they were suddenly collected one evening from their rooms in the Peking Hotel and brought into the presence of the Vice-Premier and Foreign Minister, Marshal Chen Yi. Roces explains: "A little later I learned we had stiff competition. Nikita Khrushchev was in town but the public in Peking did not learn about it until after he flew back to Moscow."

The interview that night lasted for five hours. During the first ten minutes, the marshal read a formally prepared answer to the questions, then he talked informally. Roces frequently interjected other questions or made comments for the Filipinos.

> "I came away feeling he was a very able official and obviously a man of military bearing. But he also would have made a fine actor. Every time the United States was mentioned, his eyes would flash in anger and he would make some reference to imperialism. The marshal's main theme was that we needed friendship among the yellow, brown, and black peoples. He said our misfortunes can all be traced to abuse by the white man. I asked him about the Russians in China. He answered that they are technicians working as mere employees of the Chinese government. When we inquired about possible trouble with Russia, he said, 'There never can be war among Communist states.' I asked him why the Chinese were against United States landings in Lebanon but justified the Russian invasion of Hungary. His reply was similar to the one I got everywhere in China: 'To answer that question you must visit Hungary to learn from the people what really happened.' What could I say? Now I realize I should have asked him for a ticket."

The vice-premier, himself a veteran commander from the long years of civil war, brought up the issue of Clark Air Force Base in central Luzon. This 158,000-acre military reservation is the largest American installation of its kind in Southeast Asia. Chen Yi said it was designed as a base from which to attack

China and, consequently, endangered the Philippines since the Red Air Force would retaliate. "I told him," Roces declares, "it was there by the will of the Filipino people. Small nations," I said, "were not able to defend themselves and it was natural to call on the United States." The question of Formosa was raised, and the marshal was caustic about the American "paper tiger" that had "intruded upon Chinese territory." But when the American Seventh Fleet was mentioned, the Filipinos thought he, like other Chinese Communists, appeared a bit uneasy. After much drinking of tea and smoking of many cigarettes, Roces and his companions took their leave. The next morning they received a condensed transcript of the interview, and the reporters were requested to consider its contents the official version.

AGRICULTURAL COLLECTIVES

On the collective farms that the Filipinos toured near Peking, they were struck—as they had been in the factories—with the encouragement of native mechanical ingenuity. The Chinese urge all their people to invent things; the use of laborsaving devices to boost agricultural yields through deep plowing and cleaner harvesting is encouraged. Farm implements are often designed and built of wood. Even wood implements, however, are important advances over simple hand methods.

On a model collective that covered 2,243 acres, the Filipinos tried to learn the essential methods of the agricultural "leap forward" campaign then nearing its climax and about which they had heard such glowing reports. Nine landlords formerly had owned these fields, according to the Communists. A Filipino query as to what had become of the landlords met with an embarrassed silence and then they were told that one was still farming as an ordinary laborer. Nothing they saw or were told about the families then farming the collective gave the visitors any hint of the massive commune movement launched throughout rural China a month later. Although the newly posted collective production charts showed that output of grain and vegetables had tripled since "liberation" nine years ago, and their hosts insisted that farmers were getting the benefits, the Filipinos found the income of farmers had increased by only about 20 per cent. New potatoes thrown on a garbage heap at first convinced the travelers that farmers who could waste so lavishly must be extraordinarily prosperous. Later, after comparing notes on other farms visited, they concluded that perhaps the potatoes had been so placed for their benefit.

Roces was fascinated with the collective's radio system.

> "They had a central radio room with speakers in all the houses. But I found there was no switch on the speakers. When I asked why, they said, 'There may be something important to tell the workers—we may have to call them all to dig a ditch or the chairman of the collective may want to give a lecture.' When we were leaving I'm afraid I made them a little mad. A flock of ducks was being herded from the pond and walking so properly. I asked them how they managed to regiment even the ducks."

THE SECURITY SYSTEM

In the manner of Filipinos, the vice-mayor and his companions enjoyed trying to outsmart their Chinese hosts. Several of the reporters kept their notes in Tagalog. In their Peking Hotel rooms, they applied old tricks learned as guerrillas during World War II to discover whether their baggage had been searched. They concluded that it had been gone over—but by professionals.

The Filipinos were equally curious to know whether they were followed in their shopping and sight-seeing excursions around Peking. To settle a discussion among themselves, they all trooped to a teahouse one evening shortly before they were due for a seven-o'clock dinner engagement. Some ten minutes before seven,

a clerk from the hotel walked in to remind them of their appointment.

Their hosts informed the Filipinos that they were permitted to take pictures of anything they saw in China. However, before leaving the country, they were asked to turn in all film for developing. When it was returned, strips that pictured airports and some other transportation facilities were blank. The Chinese explained, "Your camera must have leaked light."

Wherever they traveled, the Filipinos took special note of other foreign visitors, who were particularly in evidence in Peking. At their hotel one day, Roces, who is fluent in Spanish, overheard a discussion among half a dozen trade missions from Chile and Argentina. They met visitors from Thailand, Indonesia, Vietnam, Burma, Cambodia, India, and Pakistan. But not a single Japanese was seen. Trade talks between Peking and Tokyo had recently been broken off, and the Japanese were a target for public condemnation.

A COMMUNIST COURT

At the outset of his trip into China, Manila's vice-mayor asked to see a court in session. Finally, when the Filipinos reached Shanghai they were taken to observe a trial. "The judge read something like a police report charging that the accused was a pickpocket," Roces relates. The prosecutor spoke for five minutes, demanding a severe sentence. According to the prosecutor's account, the accused had started life under the Nationalists as an orphan living by his wits. After the Communist administration was established in the city, he was arrested and then placed for five years in a reformatory and vocational school where he learned carpentry. On his release he was employed in a wood-working factory, married, and had a child. Later when he stole a piece of wood from the factory for use in his home, he was apprehended and warned by the street committee governing the district where he lived. Now he had been caught stealing 60 yaun—the equivalent of a worker's monthly wage.

The defense confined itself to arguing that if anyone should be imprisoned, it was Chiang Kai-shek, of whose system this man was a victim. The accused was sentenced to five years at hard labor. Upon inquiring further into the case, Roces learned that the man had been arrested three months earlier. The vice-mayor asked what would have happened had the man, after spending this period behind bars, been found innocent. "They told me 'That never happens in this court. Everybody who is tried here is sentenced!' The real trial had already been held by his street committee and the court was chiefly concerned with punishment," Roces concludes.

PETTY DICTATORS

Roces came away from China convinced that the 668 million people actually are run by perhaps 2 million chairmen of the street committees and their counterparts on the collective farms.

> "Every resident is at the mercy of his street committee and its chairman. They control the ration cards, decide who must 'volunteer' for a sanitary detail and which individuals need more indoctrination. We asked the Filipinos living in Shanghai why they did not go to Mass. They answered: 'If we go to church then we must listen to lectures until two o'clock in the morning—the street committee officers take turns telling us how stupid we are.' One Filipina resisted all this and continued to attend Mass. Then the street committee assigned other residents in the block also to lecture her. Sometimes they kept her awake most of the night. But she still went to church. Finally, the chairman of the street committee ordered everybody, including people in the factory where she worked, not to speak to her. And she gave in.
>
> "At least in Shanghai these street committees could more or less control the salaries of their neighbors. One fellow held parties in his

house. He would kill a chicken and feed his friends and a few folks from next door. He was examined by the chairman of the street committee to learn where the money came from. The investigation showed he got the money legitimately—he was a skilled worker of the kind the Communists put such a high value on. So the street committee got his salary reduced on the grounds that he was making more than he needed. I feel this was probably done to prevent the appearance of alternative leadership."

A SUMMING UP

"There is nothing really amazing about Communist China's industry," Roces feels, "except for the blackout. I did not see any kind of industry I have not seen elsewhere. The only thing we did not appreciate before was that the Communists had organized China's people and resources for such a crash program." The vice-mayor, however, carried home one firm conclusion about China's industrialization:

> "You Americans go on selling us canned fish and sometimes even lend us the money to buy it. But the Russians help the Chinese build the factories to can their own fish. In China I kept checking to see where their consumer goods came from. In Peking I even went out and bought a bottle of vodka, thinking this surely would be imported from Russia. It was distilled in China!"

As the Filipinos returned to Canton and, after a brief second visit in that city, took a train to the Hong Kong border, Roces tried to summarize his impressions of the three-week trip behind the Bamboo Curtain. He found nothing in sight that seemed likely to unseat the new Communist government. The efficiency of the system frightened him.

> "Even 10 million soldiers acting as policemen would be nowhere near as effective as the control the Communists have organized. Every neighbor is a spy on your most personal actions. And, on top of that, most of the people seem to believe—especially the children—all they are told. It's my impression the Chinese population is convinced the United States is a 'paper tiger' and that the Communists do not take Formosa because they 'love peace so much.' The Chinese say practically nothing about atomic war—the only people I met who understood what it could mean and would talk about it were the professors in Peking. Certainly, the Voice of America broadcasts can't get through to very many. Unless the government is caught distorting a report on some important happening and the people already know the truth, the Communist leaders in Peking are going to be believed more and more."

FILIPINOS' HOMECOMING

Once home, the four reporters each began writing a daily series for his newspaper describing the group's experiences and findings in the new Asian colossus. The stories tended to emphasize the facts and figures concerning Red China's production and modernization. In their individual fashions, the reporters also discussed the totalitarian control, the "Hate America" campaign, and other methods of mass indoctrination they encountered. For some two months after the mission returned, the Manila and provincial press found the journey to China a convenient peg on which to hang comments and editorials—particularly during the autumn crisis over Quemoy and the other offshore islands.

The general effect has been to awaken a glimmer of comprehension among Filipinos of the dimensions of change within their huge neighbor. The more radical intellectuals aligned with the Communist viewpoint took evident satisfaction from these accounts of the triumph of their fellow believers. The ordinary Filipino who read about Red China's power tended to be alarmed; the stories reinforced inbred fears of the Chinese that are buttressed by popular resentment of their dominance in local trade and industry. So far, there is no evidence that knowledge of the new Communist power has encouraged Filipino congressional leaders into voting more money for defense or minimizing their nationalistic

demands for jurisdiction over United States bases. Nor has it spurred the Philippine government into revamping its Department of Foreign Affairs and training a cadre of Filipinos who can accurately assess the consequences for the republic of events in China and nearby lands.

In his first talk to the press after emerging from behind the Bamboo Curtain, Roces broached the idea of limited trade between the Philippines and Communist China, making it clear that he did not favor recognition of Peking so long as the status of the Chinese minority in the Islands remains unresolved. President Garcia publicly and promptly squelched the idea, asking, "Are you going to trade by telephone?" The Philippine government has been equally indifferent to his findings: "Not one government bureau or official, including army officers, has asked me what I learned." For a time Roces was a popular guest speaker before Rotary and Lions groups in Manila and the larger provincial cities. The Air Force cadets invited him to talk at their training base, and all the professors took time out to join the discussion. His most avid public has been among the overseas Chinese, who are fascinated with the emergence of a powerful China, yet frightened of what it means for them. "In every meeting I have had to stop the questions in order to get out," he reports.

The vice-mayor has toyed with the idea of trying a local version of the Shanghai street committees, redesigned to serve more democratic ends. Over the months, however, these plans have lost their immediacy as he has again become absorbed in local politics. But in his thinking on world affairs and the need of the Philippines for firmer ties with the United States and other democratically oriented countries, Roces has become a more sober leader. "I now know," he says, "that I cannot take for granted my children's future or what kind of a society they will live in."

SING-GUI is a large and magnificent city, the circumference of which is twenty miles. The inhabitants are idolaters, subjects of the grand khan, and use his paper money. They have vast quantities of raw silk, and manufacture it, not only for their own consumption, all of them being clothed in dresses of silk, but also for other markets. There are amongst them some very rich merchants, and the number of inhabitants is so great as to be a subject of astonishment. They are, however, a pusillanimous race, and solely occupied with their trade and manufacture. In these indeed they display considerable ability, and if they were as enterprising, manly, and warlike, as they are ingenious, so prodigious is their number, that they might not only subdue the whole of the province (Manji), but might carry their views still further. They have amongst them many physicians of eminent skill, who can ascertain the nature of the disorder, and know how to apply the proper remedies. There are also persons distinguished as professors of learning, or, as we should term them, philosophers, and others who may be called magicians or enchanters.

—THE TRAVELS OF MARCO POLO

R. Russell Dickson, Jr.

How Discounted-Cash-Flow Analysis RESHAPES Capital Programs

During the past five years, discounted-cash-flow concepts have been increasingly accepted and used by the nation's business in capital project evaluation. It is interesting to try to predict what effect this revolution in analysis and decision-making will have on the capital programs of industry. It is of interest not only to the industrial planner, because of the effect it may have on his own competitive strategies, but also to the economist and social scientist who is concerned with the effects of capital formation on the business cycle and the efficient use of economic resources.

In general, the introduction of the time concept through the use of discounted-cash-flow techniques appears first to result in reducing capital expenditures and then, as management becomes more familiar with its potentialities, to lead to a resumption of expenditures—expenditures of a new and different character. Concurrently, the economy and society in general can hope for a significantly more efficient use of capital and the other resources used with capital.

A general definition will ensure uniform understanding as to what is meant by discounted cash flow in this discussion. Let us define it simply as any one of several analytical methods whereby investment opportunities are compared with each other and with appropriately defined costs of money by discounting the anticipated cash flow of the projects being evaluated. This discounting gives weight to the timing of cash flows, either by calculating the present worth of the expected flow at appropriate interest rates or by determining the interest rate that will discount the cash flow to zero.

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CONCEPT OF TIME

The adoption of discounted-cash-flow analytical techniques seems to affect the programming of capital expenditures in industry by putting the concept of time into proper perspective. In many companies, discounting techniques have made an even greater impact by introducing the concept of time where it had scarcely existed in the minds of most members of management. The absence of a reasonable concept of time seems hard to accept in a capitalist society where interest rates, time discounts on purchase invoices, and installment buying are, in many respects, the very essence of the free enterprise, capitalist system. This is the system that these managers vigorously defend, and to it they owe much of the success or failure of their business. Prior to the introduction of cash-flow discounting, time was seldom considered in analysis of capital budget proposals. This situation persists even among some managers of companies that introduced discounting techniques several years ago, and probably still applies in the majority of business analyses.

In general, the attractiveness of capital outlays is still determined on the basis of relating an average annual anticipated net income generated by a project to the capitalized cost of the project. Most companies, in using this system, have made the first step toward introducing time by using pay-out or pay-back as a standard for evaluation. This refers to the time required to recover the initial outlay. But even this standard gives only slight recognition to time, since it completely ignores the time distribution of the cash flow within the pay-out period and, incidentally, usually ignores the time distribution of the initial outlays. (Only relatively sophisticated companies consider the time distribution of construction expenditures for a project or put a project in time perspective with the total construction and operating programs of the company.) Pay-out, of course, gives no consideration to the flow of funds after the pay-out period, let alone the timing of these flows.

Even in companies whose managements had previously been aware of time in cash flow as a factor in project evaluation, exposure to discounted-cash-flow calculations usually brings about a re-evaluation of the weight ascribed to time considerations. In general, the effect takes one of two forms: (1) the decision-maker or evaluator, who has not been using actual discount calculations, finds that he has been underestimating the effect of time and has been picturing present-worth values as significantly higher than they are; (2) if he has been reasonably accurate in his by-inspection estimates of present worth where the cash flow is approximately the same for each year, he soon discovers they are unreliable when there are fluctuations in the cash flow.

These observations are cited not to demonstrate the low state of the art of financial and economic analysis in industry but to indicate the potential revolution in thought that the introduction of discounted-cash-flow techniques can bring about. The change that the introduction of the time concept brings about in a company's "mental set" is surprisingly great. It requires only brief discussion with the management of a company, on almost any subject involving a financial decision, to be able to detect whether or not their staff uses discounted-cash-flow analytical methods. In a company where time analysis is accepted and used by management, phrases like "present worth," "cash flow," "rate of return," "financial objective," "cost of capital," and "opportunity cost" permeate the conversation. The general tone and quality of the analytical discussion is also considerably higher than in a company that gets along with such standards as pay-out and the so-called accounting or average rate of return.

Gaining Acceptance

It is typical for discounted-cash-flow techniques to enter large manufacturing companies through the economics and financial offices. People in these offices then usually find ready converts among the staff analytical groups, which are generally made up of younger personnel who have yet to acquire fixed ideas as to how analysis should be made;

they have not become wedded by long-term use and familiarity to any one system. Usually they have also had more academic training in theoretical economic and analytical concepts than people who had their financial and engineering training more than twenty years ago and who are now in higher management ranks. These analytical groups are frequently either lodged in engineering departments or have strong representation from engineering offices. It is through these engineers that the use of discounted-cash-flow analysis and its concept of time often has its first impact on a capital expenditure program.

The realization that, at a 10 per cent discount factor, a dollar of aftertax saving or revenue twenty years hence is worth only about fifteen cents today immediately changes the design engineer's mental set. Prior to this realization of the effect of time on profitability, he had put a relatively high value on durability of construction. One of his principal aims was to design facilities that incorporated highest-quality materials with reinforced construction, not only for safety but to give longest life and to minimize future maintenance costs. In fact, many engineers have tended to consider durability as an absolute value. As a result, making the adjustment to the fact that profit is also a function of time and that less durable construction may be more attractive financially sometimes appears to subject them to mental distress.

As soon as the concept does take hold, however, engineers are among the strongest proponents of the new technique. They quickly begin to look at alternative construction materials, various degrees of durability in plant foundations and platforms, different levels of corrosion protection, and alternative requirements for strength.

EFFECTS ON CAPITAL PLANS

Reduced Outlays

The net effect on the company's capital program is to put far greater emphasis on projects with shorter lives, even though it may mean scrapping and rebuilding the plant or facility when the initial installation wears out. Concurrently, the initial outlays for individual projects are reduced. Because there are limits on the number and size of facilities a company can build in any one period, the total value of expenditures for plant and equipment also falls. These limits or restraints take the form of limited market size, inflexibilities in staff and organizational structure, scarcity of plant sites, shortage of warehousing capacity, and other obstacles to expansion.

Concurrently, the first reaction of management and those who supervise the preparation of expenditure requests is to veto many proposals that otherwise would have been approved. Given the inertia of any large organization, quite a bit of time passes before the new standards can be introduced, understood, and accepted by all those who initiate and prepare project proposals. In fact, most companies find it necessary to devote substantial time and man-hours to an educational program to effect the change. Until new procedures for project evaluation are established and until staff members can prepare proposals in a form consistent with discounted-cash-flow analysis, these factors appear to have some depressing influence on the size of a company's capital budget.

Another way in which the engineer's grasp of discounted cash flow begins to have a reducing effect on capital programs is in the scheduling of construction and the timing of increments of capacity. When engineers do not understand the importance of time, they tend to design a plant that, within the general scope of anticipated demand for its output, gives the lowest operating costs consistent with the above-mentioned durability considerations. In a growing-demand situation, this tendency usually results in designing a plant large enough to accommodate demand for several years ahead. The designer gains not only the advantages of low unit cost through size alone but also the advantages of integrated one-time construction, which often permits operating costs lower than could be realized by piecemeal construction. There are frequent examples in the design and construction of petroleum refineries and in the building programs

of other processing and manufacturing industries. With the adoption of time concepts, alternative construction scheduling is explored and construction in increments becomes more frequent, with capacity coming more nearly at the time of the need for capacity rather than long preceding it. At the same time, there is increasing effort on the part of design engineers to search for and develop improved methods of integrating piecemeal construction into an efficient whole.

The construction engineers themselves soon bring a somewhat offsetting force into play as they begin to comprehend the importance of time. Considerably more emphasis is put on reducing construction time and on not permitting acquired or prepared plant sites to sit idle awaiting the start of construction. With the new emphasis on speed, there are incentives to use larger construction crews and to expedite materials to the plant site through the use of faster, more expensive transportation. For example, oil companies in the Middle East have frequently found it highly profitable to fly certain materials and equipment from Western suppliers rather than to rely on slower, less expensive ocean transportation. The increased use of fork-lift trucks and cranes can also often be justified because they speed construction. Clear evidence of the newly important role that time has come to play in construction scheduling is the increasing use of either premium payments or penalty deductions for construction contractors who advance or fall behind originally estimated completion dates.

Another way in which the introduction of full value for timing tends to reduce the size of capital programs has been in prompting more careful examination of the optimum amount of spare or reserve capacity to provide in any project. In the past, such decisions were usually made according to rules of thumb. Seldom was the rate of return on the spare capacity itself determined on the basis of probability of the demand for it and the tangible and intangible costs of being without part of it. Discounting has, in the experience of many, tended to indicate that engineers have been a bit more liberal in providing spare capacity than sound economics would dictate.

All of the above engineering effects show up frequently in the oil industry. Examples appear in the design and construction of refineries, pipelines, and storage plant and terminal facilities. The experience of the oil industry has also often demonstrated that it may be more attractive financially to delay additions to producing and refining capacity; it may be better to buy crude oil and refined products until requirements become large enough to warrant the addition of larger, economic increments of capacity.

In summary, it seems clear that, in the first years of the introduction of discounted-cash-flow techniques, the net effect of the time concept on a company's capital program is to make total capital outlays lower than they would have been had the previous standards of evaluation not been first challenged and then displaced.

Concept of Present Worth

A second general way in which the introduction of discounted-cash-flow analysis has affected capital programs of industry has been through the concept of present worth. By applying discounting techniques to a program of operations in which a series of financial outlays and incomes are reduced to a single present worth, managements begin to see more clearly that "buy" alternatives are frequently more attractive than "make" alternatives, and that "lease" alternatives are often better than either.

There may be any number of reasons why an outsider can provide some services, products, raw materials, or plant at a price less than the present-worth cost of providing it yourself, even though you may be in the same general industry or business. An obvious reason is that the outsider may be more skilled or have a more efficient plant in a particular segment of the business; but there are many other less obvious and equally important reasons. Again the oil industry affords several examples. Changes in government controls affecting the

oil industry and competitive energy industries frequently result in an individual company's being in a depressed situation relative to other companies in the industry. Thus it is often economical for such a company to sell or lease part of its assets at reduced prices to another company whose situation under the controls may make its ownership or use of the depressed assets attractive.

A specific example is the effect of the government's mandatory oil import controls. Prior to the adoption of mandatory controls in 1959, many domestic oil companies embarked on programs to find and develop inexpensive crude oil supplies abroad that could be imported to feed their refining and marketing outlets in the United States. Many of these exploration programs have been successful, but just as these companies prepared to reap the rewards of the heavy expenditures that attend such programs, the U.S. government imposed strong restrictions on the growth of oil imports and on the allocation of import entitlements. As a result, these companies, largely without market outlets outside the United States, may find it relatively more attractive to sell their new supplies to companies with marketing facilities outside this country than to try to develop new markets abroad.

The "buy" alternative is often favored in industries such as oil, where considerable expenditure is required in advance of production and sale. In these industries, there are often periods of oversupply that depress raw material and product prices to the point where it may be cheaper for some segments of the industry to buy rather than to produce their supplies. Furthermore, oil companies operating abroad may often find that discriminatory government controls applied to their operations result in native industries' being able to produce certain supplies and services at less cost than the foreign company. In the United States oil industry, there is another factor that brings about attractive "buy" alternatives. Certain tax provisions relating to exploratory expenses, the depletion allowance, and capital gains enable individuals in high personal income tax brackets to discover and produce oil with what is effectively much lower-cost money than that available to a major oil company. Thus a major company may sometimes find it cheaper to buy crude oil than to develop and produce it itself.

I believe we can ascribe much of United States industry's new interest in acquiring other companies and buying instead of producing its own supplies to the introduction of the present-worth concept, whereby the attractiveness of these "buy" alternatives becomes evident. Without having determined present worth, management was previously in a very poor position to be even aware of the possible attractiveness of buying, let alone to make a rational decision between "buy" and "make" alternatives. Similarly, it is only through use of present-worth techniques that a company can compare costs of buying or constructing capital plant and equipment with the alternative of leasing such facilities. The growing amount of literature and number of lecture series for businessmen that now include discussion of acquisitions and "buy-make-or-lease" decisions would seem to indicate that the introduction of present-worth concepts is having an appreciable influence on industrial capital programs.

The advent of present-worth analysis has induced several alert managements to evaluate the advisability of divesting themselves of assets or operations that could bring a higher value through sale or even abandonment than by their continued operation or possession. One area of divestment that has been demonstrated to be attractive to many companies after their adoption of discounted-cash-flow techniques has been the reduction of inventories. In many cases, management has found that high levels of inventory, designed to cover "every" emergency, show very low returns when the frequency and extent of the emergencies are put into proper time perspective. There are also cases where companies have decided to sell overstocks when the sales price showed a greater present worth than that attached to using up the stocks over many years.

The net impact of this present-worth consciousness on industrial capital expenditures

would appear to be to reduce total investment below what it otherwise would have been. This reduction would come about principally through reductions in industry-wide capacity, as companies with overcapacity sell either production or capacity to other companies seeking to expand, or lease capacity to these companies.

THE TOTAL EFFECT

It is impossible to estimate the magnitude of the total effect of the adoption of discounted-cash-flow techniques on industrial capital formation. To forecast the total impact on an industry or the economy as a whole, it would be necessary to know the rate at which companies will adopt these analytical techniques. Unfortunately, this rate is not predictable. For the individual company, we can say that the introduction of discounting techniques will, for a time, tend to reduce expenditures as management realizes that many of the types of projects it once considered attractive are now not attractive. The re-examination of prevalent rules of thumb and changes in staff procedures and project review, not to mention the uncertainty that the introduction of any new fundamental concept brings, all tend initially to reduce capital expenditures below what they otherwise would have been. From my brief experience, I would say that this period lasts for two to five years following formal management decision to apply discounting analysis in the evaluation of requests for funds. As this period passes and confidence in the new techniques is gained, management begins to recognize profitable new types of expenditures that had not previously been considered, and capital outlays tend to recover quickly. At the same time, the "buy" rather than "make" type of opportunity assumes a more dominant position. Once the transitional period is passed, the net change for the individual company seems to be one of altering the character of investments rather than the amounts.

For the economy and society as a whole, there is no doubt that the use of this superior analytical tool results in improved analysis and, in turn, a far more efficient use of resources. Management is encouraged to seek economical size and time in construction and to avoid leaving resources idle, either by using them efficiently or making them available to someone who can. These changes promise real benefits to our economy and standard of living. New attention to the period following pay-out also helps to assure that industrial management looks at the longer-range usefulness of capital before spending it. Furthermore, the greater degree of flexibility that results from less permanent construction will reduce the economic drag on the public's ability to change its tastes, and should permit some degree of increase in our rate of economic progress. The relative reduction in unused plant and equipment capacity may also have some dampening effect on business cycle fluctuations. This reduction may moderate both the severity in fluctuations in demand for construction and the depressing effect brought on by incremental pricing. Industry's increasing use of discounted-cash-flow techniques in project analysis also gives more practical meaning to economic theories of the firm, thus permitting far greater mutual understanding and communication between economists and businessmen. Any closer exchange between those who emphasize theory and those who emphasize practice can only mean a gain for society.

MARVIN FRANKEL

The Cards to Watch

In Russia's Economic Hand

SOVIET leaders have never shown much respect for, or the slightest interest in emulating, the economic institutions of the United States. But they have made no secret of a long-standing ambition for their country to match and then surpass the living standards that these institutions afford. In past years their utterances on the subject, while explicit about the goal, have been vague as to the time when it will be reached. In the last year or so, however, this vagueness has given way to definite prediction. In Khrushchev's words,

> "The superiority of the USSR in the rate of growth of production will create a real basis for overtaking and outstripping the United States within about five years following 1965 . . . by that time or perhaps even earlier, the Soviet Union will have moved to first place in the world both in gross and per capita output. . . . It will be a history-making victory of socialism in the peaceful competition with capitalism."[1]

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The occasion for this prediction, which Khrushchev reaffirmed on his recent visit to the United States and which has been echoed throughout the Soviet world, was the introduction of the current seven-year plan, to run from 1959 through 1965. This plan represents the initial phase of a longer fifteen-year program that, say Soviet leaders, will win for their country the major economic titles now held by the West.

Soviet aspirations have a counterpart in United States concern over their possible realization. We tend to view the prospect of Soviet parity with alarm, because we regard our great output and high living standards as testimony to the worth of our way of life. We are unsympathetic to the thought that radically different

[1] The Khrushchev quotation is from the text of his speech to the 21st Congress of the Communist Party, as distributed by the Press Department of the Embassy of the Union of Soviet Socialist Republics in Washington. The heading of the document is "Target Figures for the USSR's Economic Development from 1959 to 1965" (mimeographed press release of N. S. Khrushchev's Report to the 21st Congress of the Communist party of the Soviet Union).

and highly distasteful political and economic institutions might, by certain much-revered tests, prove as efficacious as our own.

There are, in addition, pragmatic reasons for our concern. We are anxious about the military implications of substantial Soviet economic gains. Will the allocation of still more resources to the Soviet armed forces, already a fair challenge to our own, greatly increase our difficulties in providing an effective counterforce? We are apprehensive also of the consequences that large economic advances may have on Soviet foreign trade and aid and, as a result, on the attitudes and allegiances of the world's uncommitted peoples.

How ambitious are the targets in the seven-year plan? Are the rates of advance that are called for consistent with those achieved in the past? If goals are met, where will the Soviets stand relative to the United States?

THE PLAN'S MAJOR GOALS

During the seven-year period, the projected increase in gross national product is 65 per cent, or about 7.3 per cent per annum. Industrial output is slated for greater expansion—about 80 per cent for the period or approximately 8.6 per cent per annum. The plan calls for consumption to advance in line with national product and for agricultural output to move ahead a bit more rapidly—by 70 per cent over the seven years. Assuming that population rises during the plan period at an annual rate of 1.7 per cent, a figure typical of the past few years, gross national product per capita would be expected to move up at about 5.4 per cent a year.

Targets for individual industries, some of which are shown in Table 1, vary much more than those for broad aggregates. Spectacular increases are scheduled for such products as gas and synthetic fibers. Meat and dairy products, electric power, and petroleum output are to more than double by 1965. The figure for steel is more conservative, and that for coal quite nominal.

In terms of the relative emphasis placed on major sectors and categories of goods, the plan seems to be of the same general pattern as other plans since 1950. Measured by intended rates of growth, heavy industry continues to be favored over light and consumer goods industries, and the industrial over the agricultural sector. The priority rating of the consumer appears to be unchanged. There is no indication of any basic shift in his favor, although comparatively large gains are sought in a few areas —select foodstuffs and certain household durables. It is perhaps symbolic of the consumer's status in official thinking that Khrushchev, in his lengthy address to the Congress of the Communist Party on the new plan, should give almost three times as much space to heavy industry as to consumer goods industries.

The current rates of advance represent a

TABLE 1

Some 1965 Targets of the Seven-Year Plan

Product	Output in 1965	1965 Output as Percentage of 1958 Output
Steel	86-91 million metric tons	156-165
Coal	596-609 million metric tons	120-123
Petroleum	230-240 million metric tons	over 200
Electric power	500-520 billion kw-h	200-220
Gas	150 billion cubic meters	500
Timber	372-378 million cubic meters	116-117
Paper	3.5 million metric tons	160
Aluminum		280
Chemical fibers		380-400
Motor vehicles	750-856 thousand units	150-170
Cotton fabrics	7.7-8.0 billion meters	133-138
Woolen fabrics	500 million meters	167
Leather footwear	515 million pairs	145
Meat	6.1 million metric tons	217
Butter	1.0 million metric tons	160

SOURCE: *From a release distributed by the Press Department of the Embassy of the Union of Soviet Socialist Republics in Washington. The document is entitled "Target Figures for the USSR's Economic Development from 1959 to 1965: Theses of N. S. Khrushchev's Report to the 21st Congress of the Communist Party of the Soviet Union." Predictions for output of aluminum and chemical fibers were not included in the report.*

cutback when compared with earlier plans for such major aggregates as national product and industrial output. (The annual rates of growth for national product called for in the 1951-55 and the interrupted 1956-60 plans were, respectively, 10.9 per cent and 9.9 per cent.) The current rates are also modest when compared with official claims about past achievements. However, the exaggerated nature of these claims is well known, although the degree of exaggeration appears to have been greatly reduced by index number revisions affecting data for 1950 and thereafter.

Even after this allowance, the current rates, except for those in agriculture, seem to be entirely consistent with those realized from 1950 to 1957. Using data supplied largely by Western observers, it may be estimated that Soviet national product for this period rose at an average yearly rate of 8.5 per cent and industrial output at 10 per cent. Since the increases currently planned in the same categories—7.3 per cent and 8.5 per cent—are somewhat below these figures, economic experience suggests that the goals are plausible ones.

THE LABOR SHORTAGE

Goals that seem plausible in terms of past performance are not necessarily plausible in terms of the future. To reach their targets, the Soviets must overcome some difficulties.

The chief of these is lack of man power. Primarily because of the ravages of war, recruitments to the labor force in the coming years will be far below those of previous years. A dramatic aspect of this situation is disclosed in the recently completed population census; the country contains 20 million more women than men, with virtually all of the imbalance in the over-32 age bracket. In the absence of war, these women would have borne many millions of children who would be entering the labor force over the next several years. It has been estimated that from 1956 to 1965 the population of prime working ages (males aged 15 to 59 and females aged 15 to 54) will rise by only about 8 million; in the shorter 1950-56 period it grew by close to 14 million.[2]

In Industry

With labor supplies restricted, heavier reliance than otherwise would be necessary must be placed on productivity gains in order to achieve output targets. If, for example, the industrial sector shares in additions to the labor force from 1958 to 1965 on the same basis as in recent years, productivity will have to rise about 7.5 per cent annually in order to meet the 1965 target. This exceeds significantly the annual increase provided for in the plan as well as that actually realized from 1950 through 1957 (both increases were 6 per cent). Moreover, the 7.5 per cent figure makes no allowance for a shortening of the work week—planned by 1962—from the present 46 hours to 40 hours. Such a shortening, should it come about, would cancel the benefits of growth in man power and make planned growth in output wholly dependent on productivity gains.

Some relief from the tight labor situation might be attained if, through an increase in participation rates, available man power could be more fully utilized. Although the plan seems to be counting on this possibility, the prospects are not at all promising. Participation rates already are high, with about 70 per cent of the adult population regularly employed. By contrast, the figure is about 50 per cent in the United States with its much shorter work week.[3]

In Agriculture

There is virtually no hope that any short fall in the industrial sector will be offset by overfulfillment of plans in agriculture. Although planned expansion in the latter sector is less than in the former, it is greatly in excess of

[2] D. B. Shimkin and F. A. Leedy, "Soviet Industrial Growth—Its Cost, Extent and Prospects," *Automotive Industries*, CXVIII (January 1, 1958), 48.

[3] "Soviet Industrial Growth—Its Cost, Extent and Prospects."

anything realized in the past. The grimness of the record is reflected in frequent failures to meet targets and in the fact that, until the 1950's, output hovered at or below 1928 levels. During the past few years, notable improvements have been made through the new-lands program and various policy reforms that have provided more autonomy for the collective farms and better price and income incentives. But the gains have been far below those now projected. Moreover, little further contribution can be expected from bringing new lands under the plow. Major reliance must now be placed on improving the methods of cultivation and on overcoming the many obstacles to the upgrading and diversification of output.

As if to make already difficult tasks still more difficult, the plan projects productivity increases on the collective farms considerably in excess of the expected increase in output. The intent is, apparently, that some workers should be released from the land to ease the shortage in industry. It is worth noting in this connection that during the past seven or eight years the agricultural labor force has tended to expand—not diminish. One may rightly be skeptical of Khrushchev's assertion that "all the prerequisites have been created" in this sector for a successful seven-year push.

RAISING PRODUCTIVITY

Investment in productive facilities is a principal means by which productivity gains are secured, and a sufficiently high rate would do much to meet current needs. In the Soviet case, it is by no means clear what a sufficiently high rate would be. The limited information available suggests neither a marked increase in the fraction of national product devoted to investment nor, with the possible exception of a somewhat larger share for agriculture, any serious change in its allocation among the major sectors. To reach targets, therefore, either the payoff from investment outlays will have to rise somewhat, or other sources of productivity improvement will have to be found.

Industrial organization and management constitutes one area in which current deficiencies may be converted into future strength. Among the many shortcomings in this sphere are irrational enterprise structures, as typified by overintegration of firms and insufficient specialization; overcentralization in decision-making, resulting in inability of the lower echelons to adapt their activities most effectively to their environment; lack of suitable guides, in the form of relative prices, to resource allocation. Other familiar handicaps include a deficient structuring of managerial incentives, coupled with high managerial turnover, and regional imbalances in the sense of failure to make the most economical use of the resource endowments of the several regions. In general, it may be said that the system has been geared to the fulfillment of major priorities at a cost of inefficiency and waste.

The program of economic decentralization, under which much of the authority vested in ministries in Moscow has been transferred to many widely dispersed regional economic councils, was launched in response to such failings as these. The ultimate test of this program lies in the long term, and it is reasonable to expect transitional difficulties in the early years. Nevertheless, there are many opportunities for improvement in the short run. It must be expected that many of these will be capitalized on between now and 1965, with commensurate benefits for productivity.

These considerations permit no firm judgment on the ability of the Soviets to fulfill their seven-year goals. A conservative Western view, one concerned with avoiding underestimation of the Soviet Union's capabilities, might be that many of the targets will be reached in spite of possible deficiencies, especially in agriculture.

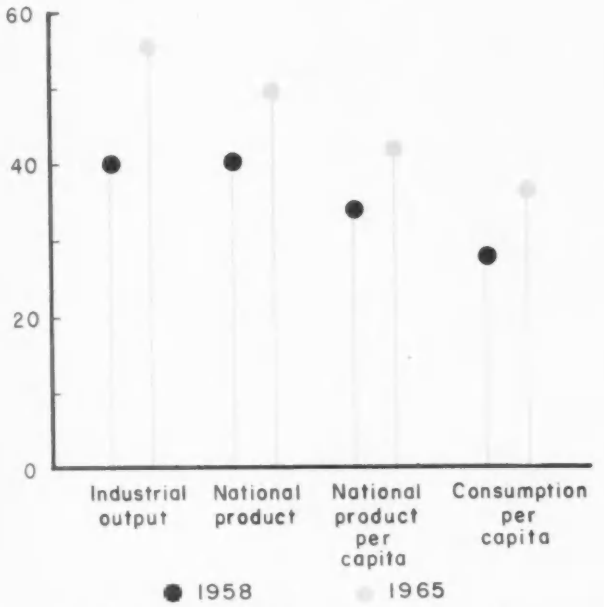
WILL WE BE SURPASSED?

Should the Soviets succeed in their efforts, the question remains whether, as Khrushchev has asserted, output levels will approximate those in the United States, setting the stage for surpassing this country within the following few years.

FIGURE 1

Soviet Output and Consumption as Percentages of U.S. Levels, 1958 and 1965*

(U.S. = 100)



* *For the U.S., industrial output and national product are projected at their 1950-57 rates (3.5 per cent in each case). For the Soviet Union, industrial output and national product are projected at their planned rates (7.3 per cent and 8.6 per cent). In each case, consumption is projected at the same rate as national product. The per capita figures assume equal rates of population growth in the two countries.*

In 1958, despite the rapid growth of the 1930's and the years following World War II, the Soviet Union lagged far behind the United States in every major economic category. Only rough estimates can be given of the extent of the lag. Hazards and limitations always affect efforts at quantitative comparison of two economies, each with different price structures, different levels and compositions of output, and different economic goals. The hazards are multiplied where the Soviet Union is involved because of the accounting concepts that country employs, its methods of statistical reporting, and its limited disclosure of information.

But it appears that, as of 1958, both Soviet national product and industrial output were about 40 per cent of United States levels. Per capita national product was only about one-third the level in this country, and, because of relatively heavy Soviet emphasis on investment and defense, per capita consumption was still lower. The latter might be put at a little over a fourth of that in the United States, and many Western specialists would consider even this figure too high. These comparisons are shown in Figure 1 by the bars relating to 1958.

Given these initial positions, the state of things in 1965 may be computed for alternative sets of growth rates. Table 2 summarizes several possible outcomes for industrial output. For the Soviet Union, three rates are shown. First is that registered from 1950 to 1957, and second is the planned rate to 1965. The third rate is essentially arbitrary and is presented to illustrate the outcome of a failure to realize targets. Of the two rates given for the United States, the first reflects 1950-57 experience. The rate for national product is not shown, but was about the same as that for industrial output. Were the period pushed back to 1948, neither the industrial output nor national product rates would be much affected. But if it were extended to include the recession year of 1958, the industrial output rate would fall more and the national product rate a bit less than a full percentage point. The second United States rate is intended to reflect an optimistic view of the future, such as might be held by an advocate of a forthcoming "golden '60's" era for the American economy.

The assumed 3.5 per cent rate for the United States appears to be a reasonable one. It is in line with recent performance and represents a middle ground between the possibilities of, on the one hand, accelerated future growth and, on the other, further setbacks like the recession of 1958. For the Soviet Union, the difficulties already described suggest that the planned rates are the best that country can hope for. Given these rates, Figure 1 shows how much the Soviets would improve their position relative to the United States.

The Soviet position relative to Western Europe would be much better, since current Soviet levels are so much closer to those of the latter than to ours. If, however, the West Europeans should succeed in perpetuating their 1950-57 rates of growth, which were somewhat higher than those of the United States, the

TABLE 2

Soviet Industrial Output as Percentage of U.S. Industrial Output in 1965
(Given alternative growth rates)

U.S. Growth Rates (per cent per annum)	Soviet Growth Rates (per cent per annum)		
	10	8.6	6
3.5	61	56	47
5.0	55	50	43

SOURCE: *Author's calculations.*

Soviet gains over the period would be relatively smaller.

Even if United States-Soviet rates are extended five more years to 1970—and to do so would be to accord the Soviets a margin of sustained advantage quite inconsistent with their long-term record—parity still would be some distance away. Soviet national product would be about 60 per cent and industrial output about 70 per cent of United States levels. Overlooking differences between the two countries in population growth, which in any event would affect the outcome very little, per capita national product would be but half and per capita consumption only slightly over two-fifths of the amounts in this country. By 1970, far from having attained the position of pre-eminence Khrushchev has marked for it, the Soviet Union would still rank a middling second in certain of the major economic categories and would fall well down the list in others.

For Khrushchev's hopes to be realized, it would be necessary for the American economy to stagnate over the next dozen years, with growth rates zero or negative, while the Soviet economy steadily advanced at planned rates. Such drastic assumptions may serve the Kremlin's political needs, but they are scarcely defensible economically.

REASONS FOR ANXIETY

The continued substantial lag of the Soviet Union behind the United States will do little to diminish the anxiety with which most Western observers view the Soviet advance. This is so primarily for two reasons. First, the lag has not prevented the Soviets from confronting us with formidable challenges of a military, political, and economic kind. Second, certain characteristics of the Soviet economy virtually ensure its capability in strategic areas despite any relative deficiency in global output or per capita income. Chief among these characteristics are its ability to allocate resources centrally, its high rate of investment, and its impressive and growing store of scientific and technical man power. Each of these carries implications for both the current situation and for the longer term.

Control of Resources

The Soviet government wields almost total control over the disposition of the nation's economic resources, and it is able to direct their use essentially by internal administrative decree. There is no counterpart in the United States to this centralized and monolithic process of economic decision-making. Governmental power is shared among federal and autonomous state and local branches. Approximately one-fifth of our gross national product is purchased, though not produced, by government. Transfer payments would add substantially to this, but are a form of expenditure wherein ultimate control rests with the recipient. Except for government's administrative functions, only a tiny part of our economic activity is controlled wholly by government.

Even after allowing for the effects of government regulation, which go far beyond its costs, one still would have to judge our government's economic influence as comparatively small. Its ability to restrain or encourage the output of particular goods or to alter the pattern of output is, in the absence of a national emergency, severely limited. Our hierarchy of priorities, which determines the amount of steel or cement produced, the amount of investment undertaken, and the quantity and kinds of goods offered to consumers, remains pretty much a creature of market forces.

The impact of centralized decision-making is plainly reflected in the pattern of the Soviet effort. Skills and resources have been lavished

on the mining and manufacturing sectors, where output and productivity have surged ahead. Agriculture, however, has languished; this sector employs about 45 per cent of the labor force but generates only about 25 per cent of the national product. Basic industries like coal, steel, cement, and machinery fabrication are well developed and exhibit a high level of engineering achievement. However, many consumer goods industries show the marks of indifference and inattention—low output, poor quality, and minimal variety. Neglect is evident in the network for distributing goods, in the provision of a host of services, and especially in housing. But military hardware is at least as plentiful as in this country, and efforts in the fields of atomic energy, missiles, and space exploration seem to be as great as ours.

The upshot is that although the Soviets may not, by our standards, be doing an expert or even an adequate job in satisfying the consumption needs of the citizenry, they are doing a remarkable job, on a minimal budget, of sustaining and advancing the interests of the Soviet state. We in the United States hold a far greater volume of resources at our disposal but adhere to a radically different set of economic and political precepts in determining their allocation. As a result, we face perennial budgetary pressures in seeking to carry out essential national objectives.

The Rate of Investment

Investment may be thought of as the means whereby a nation purchases a superior technology for itself. Other things being equal, the higher the rate of investment and the more productive the new technology that it implements, the more successful an investment program will be. In this respect, the Soviet Union, as a latecomer to industrialization, has been fortunate. It has had before it a storehouse of technological opportunities, built up over the years by the more advanced Western economies, from which it could borrow in the manner most advantageous to itself. It has been able thereby to forge ahead more rapidly than would otherwise have been possible. Most industrial nations—Japan, Germany, and the United States are principal examples—have enjoyed similar benefits in the early stages of development. But for the United States, such borrowing came to an end by the first decade of this century. Since that time, we have been on the technological frontier, with access to new opportunities limited to those that we and our industrial neighbors can generate.

In the application of technology to industry, the Soviet Union remains—and for some years will continue to remain—in the advantageous position of a borrower. The unevenness of its progress to date, with priority industries and sectors registering much greater annual gains than less favored ones, is indicative of the opportunities that still lie ahead. So also is the readiness of the Soviets to purchase from abroad, for select fields in which they lag, whole industrial plants for reassembly in the Soviet Union. The Soviet level of industrial labor productivity averages between 40 and 50 per cent of that in the United States and is below this level in many areas in which there seem to be no special obstacles to improvement. These facts suggest that ample scope for profitable borrowing remains.

With respect to the rate of investment, the limited data point to a Soviet effort appreciably greater than our own. Gross investment as a percentage of gross national product has averaged, over the past decade, perhaps two-fifths greater in the Soviet Union than in the United States. The current seven-year plan does not hint of any slackening in the pace of Soviet capital formation, which has been rapid, except for the war years, since the inception of the industrialization drive. Nor is there any sign that our own rate, unplanned and subject to moods of the business cycle, might be increased.

Investment has been a critical, if not the decisive, factor in Soviet economic successes to date, and its sustained high rate will permit maximum benefit to be drawn from already available and newly emerging technological

opportunities. But can it remain so high? There is a popular but not well-founded Western answer to this question: In some not too distant year, the government will have to make concessions to consumers and will divert a part of its investment outlays to meet consumption needs.

Unfortunately, this view is based on a misunderstanding of the growth process. In a high-investment, high-growth economy, consumption as well as investment tends to expand rapidly. A transfer of resources from investment to consumption, while it will immediately raise the latter's level, will depress its rate of growth. The gains to consumers will therefore be temporary. Within comparatively few years, the volume of consumption will prove to be lower than that associated with the high-investment, high-growth combination. It follows that in the intermediate and longer term, the interests of Soviet consumers and planners are much the same. With little to gain from a change in the investment-consumption balance, it seems unlikely that any such change will be made.

Besides the contribution it makes to a rapid over-all rate of growth, a high rate of investment also contributes to an economy's ability to respond effectively and flexibly to the need for capital facilities in particular economic areas. The larger the volume of resources on which to draw, the more easily and more quickly any specific set of objectives can be fulfilled. Certainly a high rate of investment has been vital to the Soviets in developing their complex of basic industries. It also doubtless underlies the speed and the scale on which, in the postwar period, they have moved into such unexplored and resource-costly domains as jet propulsion and atomic energy. It can be taken for granted that, as special needs and opportunities arise, the investment required for them will be forthcoming.

Scientific Man-Power Resources

The Soviet Union's scientific and technical man-power resources constitute a third factor underlying its economic and strategic capabilities. The strength of these resources has come to be appreciated in the West only in the past decade; and only within the past two years—since the launching of Sputnik I—has it been accorded any sort of widespread recognition.

The volume of these resources is impressive, and their configuration is interesting for both what the Soviets have emphasized and what they have neglected. In the twenty-six years from 1928 to 1954, Soviet institutions of higher education graduated about one-half as many students as did colleges and universities in the United States. The number of social science graduates was about one-tenth the number in this country. But the number of professional engineers was about 40 per cent greater. Looking at the situation a bit differently, there were about 2 million persons in the Soviet Union in 1953 who had completed higher education, as compared with 5.8 million in the United States. Yet the number of professional persons in applied scientific fields with such education was about equal in the two countries.[4] The United States provides higher education to a far greater percentage of its population than do the Soviets, and it offers graduate-level training to a much greater number.[5] But only one-fourth of the United States graduates are majors in the natural sciences, including engineering, while roughly 60 per cent of the Soviet graduates fall into this category.[6]

It would be a mistake to draw from these data alone any general conclusions about the comparative virtues of the two educational systems. They are cited here only to illustrate the quality and scale of the Soviet effort. The quality of that effort, with its heavy technical and scientific bias, is evident. One's appraisal of its scale will vary with the evaluative standards one chooses. If the data are adjusted for

[4] Nicholas DeWitt, *Soviet Professional Manpower* (Washington: National Science Foundation, 1955).

[5] Alexander G. Korol, *Soviet Education for Science and Technology* (New York: The Technology Press of Massachusetts Institute of Technology and John Wiley & Sons, Inc., 1957).

[6] *Soviet Professional Manpower.*

population differences and placed on a per capita basis, it is found that the Soviets are training engineers and other scientific and technical personnel at a somewhat higher rate than we, but that their stock of personnel in this category is somewhat smaller than ours. If, on the other hand, the figures are related to differences between the two countries in national product, a quite different conclusion emerges. The Soviets have at their disposal, per dollar (or ruble) of goods and services produced or resources used, over twice as many technical and scientific personnel as we have.

One might infer that the Soviets require an inordinately high skill level in order to compensate for certain institutional or other disadvantages that beset their economy, much as the Japanese require ingenuity and enterprise to compensate for the handicaps imposed by a meager resource environment. However, it seems more reasonable to regard the Soviet abundance of specialized skills as a catalyst-like factor in the rapid strides the economy has made thus far and as a portent of its capacity for further expansion. Certainly one can say that future economic gains, whether in select fields or of a more general kind, are unlikely to be checked for want of technical and scientific know-how. One also can say that, quite apart from any benefits they may enjoy as borrowers of technology, the Soviets are likely to do as good a job as the Western countries have done in generating new opportunities for themselves.

THE REAL ISSUE

The Soviet economy is not destined to overtake our own in the 1965-70 period. Whether it might surpass us at some later date and, if so, approximately when, are questions beyond the scope of this article. To answer them would require a different analytical framework from the one used here and would call for consideration of many more issues. Whatever the ultimate outcome of the global economic race, it is at best of secondary importance.

Of greater consequence for the near term, and probably also for the long term, are the plenitude of technical skills the Soviets now possess, their high rate of investment, and their centralized control and administration of economic resources. These factors represent major dimensions in the Soviet effort and in the challenge it poses for the United States and the West.

OWNERSHIP of private property is an involved subject. A Soviet citizen may own a house, a piano, clothes, a car, and so forth, but not (to choose one item) an airplane, and certainly not a mine, a forest, or a factory. Most socialists, in Russia or out, have no objection to the personal ownership of property, provided that this does not include any means of production. Marx had no objection to the accumulation of private property, and the right of contemporary citizens to possess private property is specifically safeguarded in the Soviet constitution.

—*John Gunther*
INSIDE RUSSIA TODAY

Byrum E. Carter

The *Changing Face* of American Democracy

In the nineteenth century, confidence in the prospects for the future was widespread. A few gloomy prophets did warn that all was not well, that there was no guarantee that the future would be a golden age, but their voices were lost in the chorus of optimism that dominated Great Britain, the United States, and much of Western Europe. Many things contributed to this confidence, but two developments were of great significance. One was the rise of democracy, not only as a system of political ideals but as an actual system of government. The other was the technological revolution that had rapidly moved forward. The machine seemed to offer a future of unparalleled opportunities in terms of its contribution toward relief from labor and as a means of breaking down old patterns of social organization. The technological revolution seemed to offer the possibility of making the democratic dream more than a dream, for it held forth the prospect of the elimination of the "hewers of wood" and the "drawers of water." For the first time, high civilization without a large exploited human base seemed attainable.

Nowhere was this correlation of faith in technological development and democratic optimism better exemplified than in the writing of the utopians of the last part of the nineteenth century. Edward Bellamy's *Looking Backward,* which sold in the hundreds of thousands in the United States, portrayed the future as an era in which all of the age-old problems of human society had been solved. The society he portrayed was egalitarian, for the vast machine technology that he projected as developed by the end of the twentieth century made social inequality unnecessary. In consequence, social conflict was practically nonexistent and all men were really free and

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equal. In England, H. G. Wells spun comparable tales of what could be, if only men would take the necessary steps to expand the frontiers and conquests of science, and if they would only organize themselves socially so as to make the most effective use of science and the machine technology that was its offshoot.

These fancies now have a hollow ring. Many of the wonderful machines that were but fantasies of these authors are now realities. Other machines and other techniques of organizing for greater material production, not even visualized by these nineteenth- and early twentieth-century writers, have taken their places in our lives. And, barring nuclear destruction, we can foresee even greater changes, for technological and scientific development feeds upon itself at an accelerating pace. Even the boldest predictions of what our state of technological development will be in the year 2000 is all too likely to prove fainthearted when it is eventually measured against reality.

But we have not achieved utopia. Furthermore, many among us have become disillusioned about what technology can do for human societies. In the twentieth century, we do not write utopias. The place once occupied in literature by such writings is now filled by the bleak projections of Aldous Huxley's *Brave New World*, George Orwell's *1984*, and C. R. Vonnegut's *Player Piano*, a fantasy of the social consequences of automation. Even in the pages of the science-fiction magazines, which were once filled with paeans of praise for technology and science, we now find comparable bleak portrayals of a future in which man is dominated either by the machines that were once supposed to serve him or by the few men who control the machines.

We need not focus our attention on imaginative literature to find comparable expressions of despair and uncertainty. Contemporary sociologists exploring the culture of the city, a product of the technological revolution, find it inhabited by human beings who have no sense of purpose or meaning in their lives. Some social philosophers contend that the rate of social change produced by the rapidity of scientific and technological development is too great for human absorption. All of us can expect to have to adjust to more social change in our lifetime than earlier men had to adjust to in centuries or even millenia. It is no gross exaggeration to say that George Washington would have felt more at home in ancient Rome than in modern New York.

Inevitably, the technological revolution has changed our social system, altering even minor attributes of the whole, and inescapably creating tensions between the social and political ideals developed in earlier periods and the practices of the present. Nowhere is this better illustrated than in our political system, for here the correspondence, or lack of correspondence, between our political ideals and our political practices raises problems of a fundamental order.

The technological revolution came to the United States when our basic political ideals were set. We had already carried out a successful revolution that had severed our political connection with Great Britain. We had instituted a new political system, which, while not originally organized to give a direct kind of expression to democratic ideals, nevertheless had been reinterpreted and reorganized to conform somewhat more closely with those ideals. Any effort to spell out precisely what the nature of these ideals was inevitably entails oversimplification. But for purposes of discussion we can identify the major elements about which the concepts of democracy held in the early nineteenth century tended to cluster.

Democracy included, first of all, the doctrine of popular sovereignty, the idea that the final decision rests in the people as a whole rather than any select part of the entire population. This may be interpreted as providing the *mystique* of democracy. The doctrine of popular sovereignty itself cannot be operationalized, but it hallows and legitimizes other doctrines.

The second main element of democracy was the concept of political equality, the belief that each person should count as one—and no more than one—in the operations of the political process. The third element was popular consultation, the idea that governmental policies will conform to the wishes of the general public, and that this conformity will be achieved by processes that involve consultation with the people—elections, lobbying, letters to congressmen, and educational campaigns. The fourth major element was the doctrine of majority rule, the concept that in case of division of opinion, that opinion with the support of the largest number of those who participate in the decision-making process shall prevail. This concept of majority rule was not interpreted as involving the rejection of minority rights, for it was held that there must be certain rights of political association, freedom of speech, and such procedural rights as *habeas corpus*, if any certainty was to exist that majority opinion had been found in any concrete case.

The workability of a political system based on these ideals made demands of an unusual nature on the population as a whole. The ordinary citizen was required to concern himself actively with matters of social policy. He was expected to devote part of his own time to public matters, to sacrifice some of his own immediate interests for the larger interest, and to expend intellectual effort on the mastery of public issues. So long as the United States remained an agrarian society, these behavioral requirements for the ordinary citizen could be more or less well met, for the role of government in social life was relatively small and the issues with which it dealt relatively simple. Ordinary men could understand the elements involved in many of these issues, and they could, in consequence, participate meaningfully in the control of governmental action.

The United States, however, did not remain an agrarian society. The technological revolution of the late nineteenth century transformed our society, not only in the means of production but in the nature of social relationships and the kinds of policy questions raised. As industrialization developed, new classes were produced, and greater urbanization forced men to work out new ways of living together in close proximity. The technical necessities of the new society and the social requirements of self-protection led to the development of large and complex organizations. Those who had high status in these new organizations developed a sense of power, even a consciousness of exhilarating freedom. But the place of the ordinary man became smaller; his own sense of personal significance became dwarfed.

Specialization of function brought wealth greater than that of many monarchs of the past to nearly all, but it also made each part of the society more sensitive to what happened in other parts. Economic and social difficulties arising either in a sector of the economy or in a regional area did not remain local; they ramified to disrupt life in other regions, often even in other nations, sometimes even in other continents. All of these factors contributed to the rise of big government, government that came to be concerned with every aspect of human life.

These developments have raised serious questions as to the extent to which we can find correspondence between our traditional political ideals and our political practices. They have raised some questions as to both the achievability and the value of the ideals themselves. Let us look at some of these ideals in our contemporary context, starting with political equality.

In a simple sense, we have political equality. The provision of "one man, one vote" generally applies, although such minority groups as Negroes and migrant agricultural laborers do not always have the advantages of even this formal equality. But it is also obvious that in any realistic sense there are great differences in the amount of influence that men bring to bear on political decisions. Wealth, status, even knowledge, contribute to the multiplication of influence. No man has more than one vote, but

some men influence many votes while others influence none and are themselves influenced by others. Furthermore, those who are organized reap the advantages of co-ordination and cohesion, for the political leader must inevitably concern himself most with those who can deliver him more or threaten him most. Even among the organized there are gross differences in political influence, for the officers and permanent establishment of an organized group largely determine the policies of that group. There is considerable justification for stating that in the United States we are ostensibly trying to operate a democratic political system while most of our nonpublic organizations are oligarchical in nature, their officers seldom being controlled by the rank and file.

There seems to be no reason to think that we can make changes in our social organizations that will ensure the achievement of political equality. Industrialization, the expression of technological and scientific change, requires status differentiations. The complications of modern production require that some should command and others should obey. We can perhaps improve the personal relationships of those in these categories, but we cannot remove the necessity of lines of authority with consequent differentiation of power. Nor can we deal with this problem by saying that those who have authority in one line are perhaps inferior to some other authority, for that other authority is not representative of the underlings in the initial association. The technological revolution has forced all of us to specialize, and few of us are able to extend our lines of authority and power outside of the associations representative of our own specialization. Those of us who can do so are usually found among the leaders of associations, not among the rank-and-file members. There seems then to be good ground for saying that modern industrialization precludes the achievement of political equality. In systems of great size, there must be differentiation of rank and authority, and such differentiation has inevitable inegalitarian political consequences.

An examination of the possibility of real and effective popular consultation also indicates a vivid contrast between the ideal itself and our actual practices. Popular consultation as an ideal is derived from the assumption that governmental policy should be representative of the "public" will. If government is to be representative in this sense, there must be ways in which government can consult this "public" will. One form of consultation—elections—will be reserved for later consideration. There are other forms, however, but even in them organization and status carry influence disproportionate to numbers. The public that is consulted is not the "great public" as a whole, but those parts of it that are either organized and actively interested in a particular aspect of public policy or that are presumed to have some kind of specialized competence. We find ourselves actually unable even to locate what could be described as the will of the great public—and even when we think we have located it, what we find is vague, amorphous, and ill-informed.

The early democrats were confident that the people would be able to judge specific issues of policy. The technological revolution, with all of its ramifications into matters not only of domestic but international policy, makes this confidence seem less well placed.

Many of our issues of public policy are of such great technical difficulty that they are comprehensible only to experts. And few of us are expert about more than a few things. The accumulation of knowledge that has taken place is more social than individual. We have had to divide areas of knowledge, then redivide them, and then redivide the redivisions. But governmental decisions inevitably embrace nearly all of these areas, and most of us are forced to throw up our hands in dismay if asked to provide a rational justification for one line of policy rather than another. At the international level, this problem obviously becomes even more complicated, but let us leave it out

of consideration for the moment. The specialized competence required in decision-making forces government to rely on experts to an increasing extent. Even those whom we think of as exercising great authority are often no more than the errand boys of the experts on whose judgment they rest. The efforts sometimes made to consult the public on these issues are never fruitful, although they may be necessary. Such consultations now are often made, not to find what the right answer would be, but instead to try to find the limits within which the decision must fall if the government is not to find itself facing a hostile public.

Even with respect to the element of majority rule, it is not at all clear that the majority rules in any substantial sense. The basic function of the majority with relation to policy is to set limits within which policy decisions will be made. Policies made outside these limits cannot be enforced without great social difficulties. Politicians, in our system, are not likely to act outside these limits for two basic reasons. First, they are themselves partially indoctrinated with the general values that delimit the area of social choices and are therefore unlikely to think of violating the basic social norms. Second, even if they should wish to move outside these limits, they will not because there is a serious occupational risk—the loss of office.

Majorities do, in this sense, rule, although it should be added that those who have acquired control of media of communication, including office in associations, are better situated than others to establish even these limits. But majority rule in this sense is not what the early democrats had in mind. They wished to ensure that particular decisions reflected the wishes of the majority. This condition seldom exists in the modern democracies. Specific policy decisions in the United States tend to be products of what Robert Dahl has called "minorities' rule."[1] The interested part of the public calls the turn on decisions; and among that interested part, the organized generally win over the unorganized. The usual distinction between dictatorial and democratic systems in terms of the practice of minority rule in one and majority rule in the other does not seem to be the significant distinction.

To quote Dahl again, "The distinction comes much closer to being one between government by a minority and government by minorities. As compared with the political processes of a dictatorship, the characteristics of democracy greatly extend the number, size, and diversity of the minorities whose preferences will influence the outcome of governmental decisions."[2]

The decision-making process in modern democracies does not involve a series of decisions made by great, united majorities, but a series of decisions by which we appease significant minorities. Elections, in this kind of system, determine who shall make the governmental decisions, at least in a formal sense, and set the general context within which decisions are to be made; but they do not control the actual decisions that will be made. Our national political campaigns, with their glittering generalities, ambiguous phrases, and lofty promises, provide clear evidence of this characteristic. Our elections and our party platforms function not to sharpen issues but to gloss over them, to hide them in a fog of verbiage. Once elections are over, we can get down to the more serious business of making decisions, a process that we handle by bargaining and deals among the really interested publics involved in each specific area of policy determination.

These crude efforts to contrast our political practices with our political professions may leave the reader disturbed by the apparent cynicism that seems to underlie my words. A political system that functions to keep principles out of the domain of direct popular control is certainly not the kind of system that we extol in our present international ideological

[1] Robert A. Dahl, *A Preface to Democratic Theory* (Chicago, Ill.: University of Chicago Press, 1956), p. 128.

[2] *A Preface to Democratic Theory*, p. 133.

disputes. But I do not think we should too hurriedly disparage the worth of our going political system or seek to return to the "political purity" practiced by our forefathers.

The technological revolution has produced a vast number of associations of men. These associations have vested interests, interests for which they might even be willing to fight if pushed too far. If we fought elections on issues of principle, these interests might be directly pressed to "either/or" decisions. We may be better off because we have found means to prevent the taking of such decisions. We do take decisions that are more detrimental to some associations than to others. But our bargaining process seldom results in a situation in which one association is totally divested of rights. In consequence, we do not force associations to consider ultimate questions of loyalty. Nowhere is this better evidenced today than in the political intrigues and manipulations by which we have modified the ruling of the Supreme Court in the school integration cases.

I realize that these consequences will not satisfy those who wish to judge politics in highly moral terms or in terms of some pure calculations of efficiency in decision-making and management. But judgments of morality and efficiency are often more complicated than they seem to be. Procedures that, if judged alone, we might condemn as immoral or inefficient may, if judged in full context, receive a quite different rating. The development of a political system in which social conflict is moderated, even at the cost of direct popular control of government, may contribute more than it costs. Industrialization has made us increasingly dependent upon one another. This very fact has placed greater power to subvert and obstruct in the hands of strategically located minorities. Direct decisions on principle might well contribute to greater use of such power than we now have. The "immoralities" of the bargaining process may therefore contribute positively to the functioning of our social system.

To-day we have arrived at the point where we can see clearly that there are differences in modes of thought, not only in different historical periods but also in different cultures. Slowly it dawns upon us that not only does the content of thought change but also its categorical structure. Only very recently has it become possible to investigate the hypothesis that, in the past as well as in the present, the dominant modes of thought are supplanted by new categories when the social basis of the group, of which these thought-forms are characteristic, disintegrates or is transformed under the impact of social change.

—*Karl Mannheim*
IDEOLOGY AND UTOPIA

Robert C. Turner
EDITOR

SOLAR ENERGY AS A FUTURE WORK HORSE

by George O. G. Löf

IN SHARP contrast to practically all of our conventional sources, solar energy is of immense quantity, universal availability, very low concentration, and extreme variability. Its magnitude can be readily appreciated by recognizing that this daily energy supply of 70 trillion horsepower-hours to the United States is about 1,700 times as great as all of our present uses for energy. Or, in more easily visualized quantities, a Texas oil well on a quarter section of land would have to produce crude oil at a perpetual rate of 2,500 barrels per day to have an energy output equal to the sunshine falling on that piece of ground.

Although solar energy is universally received, its quantity varies from place to place. Typical annual average radiation intensities in very sunny climates are about 2,000 B.T.U. per day per square foot of ground area, whereas a mean value for the entire United States is approximately 1,500 B.T.U. for the same area. To make solar energy usable, some sort of surface must be provided to intercept the radiation and convert it into heat, electricity, or chemical energy. Conventional energy exchange surfaces, such as the tubes in a boiler furnace, may transfer heat at hourly rates of 100,000 B.T.U. per square foot of area; solar energy, however, has a maximum intensity of only about 350 B.T.U. per square foot per hour. This means that very large surfaces must be used for the recovery of appreciable quantities of energy.

Possibly the greatest problem in solar energy utilization is its intermittent nature. Not only is there the regular variability from day to night and season to season, but there is fluctuation due to cloudiness. The use of solar energy must therefore depend on there being (1) no need for continuous energy supply, or (2) supplementary energy use, or (3) some form of solar energy storage.

Solar energy can readily be converted to heat, and it can be converted into electric energy either directly, as in the well-known solar battery, or indirectly in some form of heat engine. It can also be converted to chemical energy by use of living and nonliving systems. Although the greatest use of solar energy is in agriculture, this application is omitted here because the economic factors and uses for the products are outside the energy field.

CONVERSION METHODS

Conversion to heat can be accomplished by either of two simple processes. Hot air, hot water, steam, and other fluids can be supplied from a flat-plate solar collector comprised of one or more transparent glass or plastic surfaces above an insulated, blackened metal sheet. By absorption of solar radiation, the black surface is heated, even to several hundred degrees if desired, and a fluid passed through tubes or channels in contact with the hot surface can thus be heated. Depending on many factors, the efficiency of solar energy recovery as heat in fluids, say at 150° F. to 250° F., may range from 50 to 60 per cent down to 25 or 35 per cent.

A focusing reflector of the same exposed area collects roughly the same amount of solar energy; but by concentrating it on a small receiver, much higher temperatures can be achieved at comparable efficiencies. This unit must be arranged to follow the apparent movement of the sun, and it can function only in perfectly clear weather. Heat at several hundred or even several thousand degrees can be delivered by circulating a gas or liquid through a suitable heat exchanger or boiler at the focus.

The production of electric energy from heat obtained from solar radiation by either of these processes can be accomplished by the

Mr. Löf is a consulting chemical engineer, a research associate for Resources for the Future, and is associated with the University of Wisconsin.

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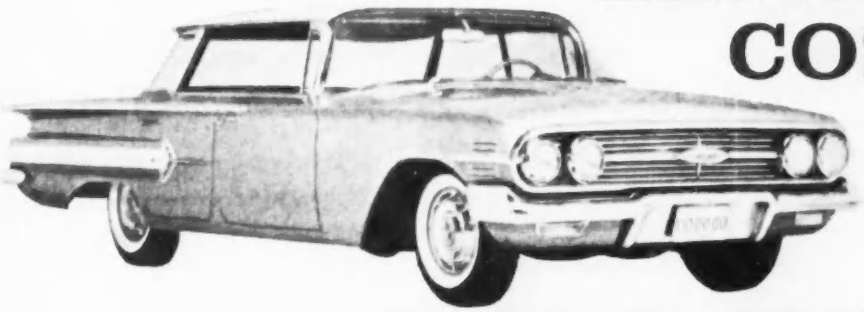

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conventional methods, employing expansion engines of reciprocating or turbine types. Steam from focusing or flat-plate solar collectors can be used directly, or if some other medium is being heated in the solar unit, steam can be obtained by heat exchange. At the comparatively low operating temperature of the flat-plate collectors, however, heat-to-power efficiency is poor and the over-all solar-to-power conversion efficiency may not be over 5 per cent. In the focusing system, higher temperatures make it possible to achieve heat-to-power efficiencies approaching those in commercial power plants, and over-all solar-to-power conversions of 20 per cent could be realized in an ideal design.

Direct conversion of solar radiation to electricity is also possible. The silicon cell—so effectively employed as a power source in our new satellites—utilizes an electronic property of matter, delivering 10 to 15 per cent of the solar radiation as electric energy. Concentrated solar energy can also be used efficiently as the heat source for the recently developed thermionic and thermoelectric conversion elements. Presently less efficient methods employing chemical reactions may ultimately prove useful.

High efficiency is important in conversion of solar energy, but for a different reason than in conventional fuel use. The minimizing of fuel costs is the primary objective of efficiency improvement in the use of fuel; but if the raw energy is free, as is solar energy, this incentive is absent. However, it is the size of the solar collector surface and the amortization of its initial cost that are so heavily dependent on over-all solar utilization efficiency.

A final technical note concerns storage of solar energy. Solar heat can be stored at moderate temperatures in the form of hot water, heated solids, or chemical compounds. The cost of facilities for 24-hour storage is not a large fraction of the cost of the solar collection equipment. Long-term storage for smoothing season-to-season and even day-to-day fluctuation in solar radiation is, however, much more expensive. High-temperature heat storage for subsequent electricity generation can be accomplished in a similar manner, but at still higher cost. Another technique for solar power storage is the use of surplus daytime electric output for pumping water to a higher level, for subsequent fall through hydroelectric generation facilities during sunless periods.

There are no great technical obstacles to the use of this energy source. The technology is comparatively simple, and, although major improvements and new discoveries will undoubtedly take place, wide application of solar energy would appear to depend much more on economic developments than on scientific advances. In other words, the reduction in cost of solar-energy conversion equipment through design changes, material substitutions, mass production, and the rises in cost of conventional energy are the primary requisites for extensive utilization of the sun's energy.

PLACE IN ECONOMY

The firms and individuals that have income from energy may be divided into three groups. First, there are the owners and producers of the raw-energy source, the organizations that own and mine coal and uranium deposits and those that own and sell petroleum and natural gas. Second, there are the organizations that convert the raw-energy sources to other forms and sell the resulting energy, including petroleum refiners that manufacturer motor fuel and utility companies that produce and sell electricity. Third, there are the suppliers of materials and equipment that are used by the producers, converters, and ultimate users of energy, including the manufacturers of automobiles, electric-generating equipment, steam boilers, household furnaces and air conditioners, cookstoves, and the many materials that go into the fabrication of such equipment.

Let us now see how solar energy fits into this industrial pattern. There is no counterpart here of the owner and producer of raw fuel energy. Every landowner is, in effect, a sun owner, in proportion to his acreage. It therefore appears that solar energy use will not involve industrial activity in the raw-energy owner and producer segment of the economy.

Next, in converting solar energy to forms that are salable, the purchase of adequate land and the construction of solar heat-recovery equipment will put power companies in a position analogous to that which they now occupy by their use of fuels for the same purpose. The individual consumer will also become a converter, at least in such applications as heating and cooling.

The third category of equipment supply will be as important to industry in the manufacture of solar energy conversion facilities as it now is for conventional sources. The conversion of solar radiation to heat or to work requires equipment analogous to that presently being used in the conversion of other sources, including heat exchangers, heat storage units, control systems, and semiconductor, alternator, and transformer equipment.

Since there are no owners of solar energy, its use cannot be

expected to receive the sort of promotion as does, for example, natural gas. Thus, one incentive for solar-energy development is lacking. In the category of converters and sellers of energy, there is a corresponding lack of incentive to develop solar energy because now there are ample and, in most cases, cheap supplies of fuel and water power for conversion. An alternate basic supply is not yet needed, and the time when it may be needed in the United States is too distant to justify research and development expenditures by these organizations. To a great extent, the same might be said of nuclear energy; but here, there is a heavy government subsidy to developers that is absent in the case of solar energy.

Therefore, only the manufacturers of materials and equipment for use by the individual converter of solar energy are likely to participate in near-term economic benefits, and the rate of development of this resource will be largely dependent on their efforts. Research and development will be carried forward by these firms at rates dependent on the expected sales potential of the products. Except in special situations, the ultimate energy derived from solar radiation must be competitive if suppliers of conversion materials and equipment are to sell their products. The rate of solar development by equipment and materials suppliers thus depends on their ability to develop and produce such goods at costs that will make the converted energy competitive with that from conventional sources.

But if the power companies are not going to be using solar energy for many years to come, the buyers of this equipment will be limited to the individual energy users—the homeowner, businessman, industrial firm, and the farmer. These people have solar energy available to them; they can purchase the equipment to convert this energy to useful forms; and they can then utilize the heat, electricity, or other products. Ultimately, the commercial power supplier will also be an equipment customer.

EQUIPMENT NEEDED

The dependence of solar energy development on materials and equipment makes it convenient to place further discussion in a framework of present and potential participation by industry. There is another reason for orienting the subject matter this way. At least within the next few decades, solar energy cannot be expected to furnish an appreciable fraction of the energy needs of the country—in the year 2000, 1 per cent would appear to be an optimistic estimate. But the importance of solar energy to equipment manufacturers might be much larger than is apparent from this small percentage.

By way of analogy, dry cells, telephones, and radios are insignificant in the over-all energy use picture, but their manufacture is an important segment of industry. Although converted solar energy might not loom large in the energy statistics, conversion equipment could occupy a significant position in manufacturing.

Equipment Available

Solar energy equipment now being manufactured and sold falls into four groups: (1) water heaters, (2) solar-electric converters or solar batteries, (3) cookers, and (4) toys and novelties. These products are made by numerous manufacturers, who, in turn, utilize metals, glass, plastics,

paints, fabrics, chemicals, and many other materials from their suppliers. Except for the solar water heaters, these products are really not intended to supply energy at competitive costs. Instead, they serve special needs.

The manufacture of domestic solar water heaters in Florida has been going on for several decades. Simply by means of a glass-covered, blackened metal sheet in contact with tubing through which water circulates to an insulated storage tank, a 50-square-foot unit on a house roof in southern Florida can supply enough warm water for the average family. A survey shows no less than a dozen manufacturers of this equipment and about 25,000 solar water heaters in use in this area. Recent developments in heat-transfer surfaces and transparent plastic films may stimulate this market, although the recent arrival of natural gas in the area will provide stronger competition.

Almost at the other extreme of size and precision are the solar cells being manufactured for use in radios, clocks, toys, hearing aids, and communications equipment. When a very pure crystal of silicon is sliced into thin wafers, which are then doped with traces of certain other elements and exposed to sunlight, an electric current is produced. Since the wafers have an area of less than a square inch, many would be required for delivery of much motive power, but energy for communications and other small power needs can be obtained from relatively few irradiated cells. A solar radio, for example, needs only half a dozen. Most of the satellites this country has launched have this type of radio equipment.

At present prices of silicon metal and solar cells, generating capacity would cost over $50,000 per kilowatt, compared with fuel-operated plant costs below $200. But there are possibilities for cost reductions by use of focusing reflectors to concentrate considerable solar energy onto comparatively few solar cells, or by use of cheaper methods for preparing the silicon surface. But even if this remains an expensive source of electric energy, there will be many new uses for small electrical outputs at these costs. Electricity in space may well be produced primarily by converters of this type, and their extensive use in communications equipment appears possible.

In the third group of products, portable solar cookers are beginning to enter the market for outdoor recreation equipment. Typical of these is a folding solar barbecue grill that focuses nearly a kilowatt of solar power on the cooking surface by means of a flexible, fabric-plastic reflector supported on a modified umbrella frame.

Still another group of solar-operated devices is in the toy and novelty markets. Although of trivial consequence now, this group of products will become larger as solar energy applications increase. Two current examples are a solar cigarette lighter and a rotating solar pinwheel.

PROSPECTIVE USES

Three types of solar-operated equipment in the development or testing stages that may become commercial products within the next few years are a domestic food cooker, a food refrigerator, and a small distillation unit for demineralizing highly saline water. Their first important application probably will be in countries where domestic sources of energy are scarce and expensive.

Reflecting-type solar cookers of rigid plastic with metalized linings have received field trials in rural Mexico and in a few other countries where the supply of cooking fuel has become critical. Potentially cheap, these units show promise for substantial sale in parts of Mexico, Central and South America, southern Asia, the Middle East, and North Africa. Simple food refrigerators are also being developed. By means of an intermittent absorption cycle, several pounds of refrigerant and absorbent in a two-chambered metal container can keep a small insulated icebox cold for twenty-four hours. The unit must be regenerated once a day by solar heating for about two hours. At a price potentially below $25, the market for such a unit might be in the millions.

A third need in the arid, unindustrialized regions of the world is safe drinking water for people and for domestic animals. In many areas, highly saline ground water is available but practically unusable, while other highly populated regions on the seacoast lack fresh water even for minimum requirements during certain seasons. Low-cost water distillation equipment would find ready application in these countries, provided that operating energy is available. By evaporation from shallow basins directly heated by the sun and condensation on sloping glass or plastic covers, distilled water can be produced from sea water in a sunny climate at a daily rate of approximately one-tenth of a gallon per square foot of basin. Several designs are now being tested by the U.S. Department of the Interior at a pilot plant in Florida. As they are simplified and costs are reduced, small installations should begin to appear in areas where water supply is a critical problem. Prefabricated, plastic-covered units with a daily capacity of a few

gallons will probably be available soon, particularly for export. Much larger solar distillers, capable of supplying potable water to whole communities, may precede the smaller units if current development efforts are successful.

FUTURE MARKETS

By far the largest American market for solar energy equipment, at least during the present century, will be in residential heating and cooling systems. One-fourth of the nation's energy consumption is for space heating, and the steady growth of air conditioning is placing increased demands on electric power facilities. Substitution of solar energy for these other sources, even if initially only in the sunniest regions of the country, will require large quantities of solar heating and cooling equipment.

Residential solar heating is still in the development stage. At least five buildings in Massachusetts, Colorado, Arizona, and New Mexico are now partially solar heated by means of several different systems, and others are in the planning stage. The MIT house in Lexington, Massachusetts, employs hot water in a manner similar to the Florida water heaters previously described, but on a larger scale. A house in Denver utilizes solar-heated air and heat storage in a bin of loose rock. Supplementary heat is supplied to these buildings by conventional furnace equipment or, as in two other installations, by a heat pump. These solar-heated buildings are yielding valuable information on performance, design, convenience, and public acceptance.

In areas where domestic fuel is cheap, solar heating will probably not be important in the near future. Elsewhere, particularly where domestic fuel costs have been rising and where sunshine is plentiful, there should be commercial applications within a decade. Economics are not now favorable for construction of individual solar heating systems, but factory production of solar heating equipment could soon make costs competitive with fuels in many areas.

Development of solar-powered air-conditioning equipment is considerably behind solar space heating. No full-scale units are yet in operation, but the appealing aspects of maximum energy availability coincident with maximum cooling demand are stimulating research in this rapidly growing field. Most attractive are absorption refrigeration systems operated by hot water, hot air, or steam supplied from roof-mounted solar heat exchangers used also for winter heating.

It is very difficult to estimate the potential market for solar heating and cooling equipment. But even assuming as little as 10 to 15 per cent of new residential construction being provided with solar heating and/or cooling systems in two to three decades, the annual market for perhaps 300,000 units could gross over $500 million for the manufacturers of this equipment and their material suppliers.

In an over-all view of the potential of residential heating and cooling with solar energy, the following factors are of particular importance: (1) these uses represent a sizable segment of the national energy demand; (2) the cost of heating and cooling with conventional energy is likely to continue its rise; and (3) the quantity of solar energy available in winter and summer in most areas of the country is adequate for most heating and cooling requirements.

The usual approach to electricity from solar energy is through operation of an engine by means of steam produced at the focus of a concentrating solar reflector. These reflectors have various shapes, such as paraboloids, parabolic cylinders, and cylinders. The high cost of these reflecting surfaces, necessarily movable to follow the sun, coupled with the low efficiency of steam engines operating at only moderate pressures, would make the fixed cost of even a large installation, per kilowatt-hour generated, much greater than the cost of electricity from large power plants in the United States.

There are two other approaches that appear to be more promising. One is the production of steam or other vapor in flat-plate solar heat exchangers, similar to the units used for house heating, and its subsequent expansion in an engine. But major reductions in equipment costs will have to be made before this source of electricity could begin to compete with modern power plants. Again, however, in parts of the world where fuel is very expensive, small electric generating plants operated in this manner should become important at a much earlier date, possibly within the next decade. As fuel costs, including nuclear sources, rise, solar electricity should gradually become predominant.

The other general method by which large-scale electric power might be produced from solar energy is by direct conversion with semiconductor materials, such as is employed in silicon cells, and by use of thermoelectric or thermionic generators heated by concentrated solar energy. Economies in materials, manufacture, and utilization will certainly reduce the cost of these components, but it is too early to forecast the minimum levels that can be reached.

Predictions of the eventual entry of the power companies into the production and sale of solar electricity are based on considerations of only the presently known practical sources of energy. If successful and reasonably economical power can be achieved from the nuclear fusion reaction based on hydrogen, deuterium, or lithium, commercial solar electricity might be delayed many centuries. Certainly, no one is able to make such distant projections, so the best we can do is to outline the expected situation if factors preclude application of this vast source of energy.

TWO POSSIBILITIES

No discussion of solar energy would be complete without mention of the remarkable capabilities of the solar furnace. With very precise focusing reflectors ranging in size from a few feet in diameter to the 35-foot French solar furnace, these systems can produce temperatures in excess of 5,500°F. The newest solar furnace is the 28-foot concentrator at the Quartermaster Research and Engineering Center in Massachusetts. Although these units have some unique research and development uses, their cost now prohibits application as industrial production equipment. Another long-range prospect, therefore, is for solar furnaces of perhaps more economical design to be used in the next century for certain high-temperature metallurgical and ceramic processes requiring special conditions. Solar variability is a disadvantage, of course, but choice of furnace sites could minimize unplanned shutdowns.

One of the most intriguing potentialities of solar energy is in combined energy absorption and storage by means of photochemical reactions. For example, water can be decomposed into hydrogen and oxygen by the absorption of energy in the ultraviolet portion of the solar spectrum. These gases can be stored for subsequent combustion and power generation. Certain other reactions could possibly be utilized whereby absorption of energy would cause a change in one direction, which could be reversed when desired to liberate the absorbed energy as heat or, more ideally, as electricity. Limited progress has been made along all of these lines, but only small fractions of 1 per cent efficiency in converting solar to chemical energy have been achieved. If a substantial technical breakthrough should occur, the whole economic picture of large-scale solar-energy utilization could be affected.

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book notes and reviews

If the light we use is but a paltry and narrow taper, most objects will cast a shadow wider than themselves. (Thoreau)

The victory of a social order will be achieved, not by jet missiles, nor by atomic and hydrogen bombs, but by developing that social order which best provides material and moral good for mankind. (Nikita Khrushchev before the Supreme Soviet, December 21, 1957, as quoted by W. E. Hocking in *Strength of Men and Nations*)

POWER IN WORLD POLITICS:

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ONE THEME pervades the literature on the world situation today: It is later than we think, and perhaps too late. Some mean this to apply to our military stance, some to our economic position (with special reference to competitive coexistence), but a surprising number refer to what is currently styled our moral posture. To their credit, many see it—although with differing emphases—as one problem involving all three. An attack on any one facet alone would never result in any appreciable increase in either prestige or power.

Recently, however, there has been a growing dissent to the more general doom-hearkening, a gaining belief in the possibility that through prolonged coexistence might come less competition and more convergence. This revisionist theory usually starts with a comparison of the changes in the societies of the United States since 1900 and of the U.S.S.R. since 1948 or with the divergencies of the contemporary U.S. and U.S.S.R. economies from the tenets of classical capitalism (or the exploitive capitalism of the 1890's) and classical Marxism (or the Lenin-Stalin exegetics).

The theory then projects these trends into the future, but with the reservation that "converging" does not necessarily mean eventual identity. In other words, neither capitalism nor communism will bury the other. What will evolve will be a number of varying societies—varying, that is, in the relative amounts of private and state control, or of market and budget orientation (to use the terminology of Kenneth Boulding in his article "Symbols for Capitalism" in *Harvard Business Review*, Jan.-Feb., 1959). Boulding's particular expression of the theory is this:

"In one's more optimistic mood, therefore, it is possible to visualize a true dialectical synthesis of the market and the budget in which each will play its proper part in the coordination of human activity, and in which neither one will inherit the peculiar pathological features to which each institution is subject today. Such a synthesis may be a long way off, but belief in the possibility of its coming may draw both capitalist and communist societies toward it." (p. 46)

Reinhold Niebuhr in his recent book, *The Structure of Nations and Empires* (more of which later), draws the parallel of the bitter Catholic-Protestant wars of the sixteenth century and their final resolution in tolerable coexistence.

Or as Louis Halle, author of *Dream and Reality: Aspects of American Foreign Policy*, concluded in a recent article in *The New York Times Magazine* (Nov. 15, 1959) called "The Struggle Called 'Coexistence'":

"It is safe to say that neither the Communist system as it exists in 1959 nor the capitalist system as it exists in 1959 is going to win this contest. Barring a disaster, there will never be a moment at which a final score is announced. For history, unlike baseball, does not come to an end. Both social systems will continue to be transformed, in the future as in the past—perhaps transformed, at last, beyond recognition. And in that transformation the struggle may eventually be resolved, like the struggle between Christendom and Islam, without either victory or defeat." (p. 118)

On the military side, this is paralleled by the consensus that atomic warfare is unthinkable from the point of view of either security or practicality. Even advocates of a Holy War, who believe that dying for a principle is the noblest expression of the human spirit or the mandate of a jealous God, waver at the concept of *racial* martyrdom (referring, of course, to the human race) as opposed to individual or even national martyrdom. The battle over the efficacy of the deterrent has dimmed temporarily under the conversations on disarmament. Two extreme views of this, however, were discussed by Walter Millis in a review of Oskar Morgenstern's *The Question of*

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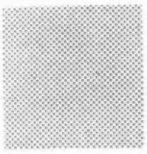

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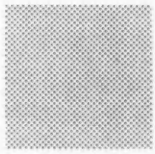

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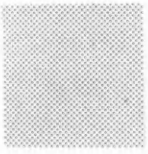

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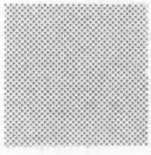

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National Defense (Random House) and Stephen King-Hall's *Defense in the Nuclear Age* (Fellowship Publications) in *Saturday Review* (Nov. 28, 1959). Morgenstern's solution lies with an extension of the "balance of terror": For optimum results, both the U.S. and the Soviet Union should maintain completely invulnerable strike forces. On the other hand, Commander King-Hall, reports Millis, suggests that methods more efficient than that of accepting nuclear annihilation could be found to train a population to meet and survive Communist occupation; therefore, he proposes unilateral nuclear disarmament for England. These are indeed the poles of the field.

Most military authorities have turned to considering the prevention of a general atomic holocaust. To be able to extinguish brush fires before they spread into conflagrations is the main focus of attention, and limited-war capacity is the suggested solution. The discussion is centered on questions about the means of conducting limited war: With or without tactical nuclear weapons? What is an adequate shield force in Europe? Or is only a "tripwire" defense necessary?

Bernard Brodie, a senior staff member of RAND, has written in **STRATEGY IN THE MISSILE AGE** (Princeton) a book that will have as much impact as Kissinger's *Nuclear Weapons and Foreign Policy* (Harper). Essentially it is a criticism of massive retaliation. Assuming that our policy is not to strike first, the structure of our present military force is such that after the opponent's first strike, we will have considerably less than a massive force with which to retaliate. In addition, in a land "scarred and ruined beyond all present comprehension," few survivors would have much concern for "the further pursuit of political-military objectives." His advice is to give more attention to protection of our striking force and our people so that there would be both the capacity and will to strike back. In the meantime, he says, we should be prepared to fight limited wars with nonnuclear forces.

The entire limited-war concept is an attempt to resurrect the old Clausewitz definition of war as an instrument of policy for specific and limited political objectives. This concept had apparently been abrogated by the introduction of "total war" in the form of unconditional surrender, or by Lloyd George's "knockout blow" in World War I. With the arrival of the atomic bomb, its demise seemed certain. The fact that there have been some twenty limited wars since 1945 without use of nuclear weapons has led to a reconstruction of this military theory.

The perennial problem of the causes of war is the subject of a book of uncommon interest in this context of might and/or morality because of the way it structures the problem. The book is **MAN, THE STATE, AND WAR** by **Kenneth N. Waltz** (Columbia, $5.50). In its words, it is an investigation of "the particular contribution which classical political theory makes to understanding the causes of war and to defining the conditions under which war can be controlled or eliminated as the final arbiter of disputes between groups of men in the absence of central authority."

There are three ways of looking at international conflict (Waltz calls them three images): First, the locus of the important causes of war is found in the nature and behavior of man (the approach of the behavioral scientists). Second, to understand war and peace, political analysis must be used to supplement and order the findings of psychology and sociology (the approach of the political scientist, who insists on a reference to the political framework within which individual and social actions occur). Third, the paramount issue is that the world's state system is international anarchy in which everybody's strategies depend on those of everybody else.

Waltz's main point is that no

INTERNATIONAL BUSINESS

Hugh G. J. Aitken (ed.), THE STATE AND ECONOMIC GROWTH (Social Sci. Research Council)

DEVELOPMENT OF MANUFACTURING INDUSTRY IN EGYPT, ISRAEL AND TURKEY (Columbia)

Economic Commission for Europe, ECONOMIC SURVEY OF EUROPE IN 1958: INCLUDING STUDIES OF THE RELATIONSHIP BETWEEN ECONOMIC EXPANSION AND BALANCES OF PAYMENTS IN WESTERN EUROPEAN COUNTRIES AND CONSUMPTION TRENDS AND STRUCTURES IN EUROPE (Columbia)

ECONOMIC DEVELOPMENTS IN THE MIDDLE EAST 1957-1958 (Supplement to World Economic Survey, 1958; Columbia)

INTERNATIONAL TRADE 1957-58 (Contracting parties to GATT; Columbia)

Miroslav A. Kriz, GOLD IN WORLD MONETARY AFFAIRS TODAY (Princeton)

LABOUR COSTS IN EUROPEAN INDUSTRY (Internat'l Labor Off.)

Alec Nove, COMMUNIST ECONOMIC STRATEGY: SOVIET GROWTH AND CAPABILITIES (Nat'l Planning Ass'n)

Rolf Sannwald and Jacques Stohler, ECONOMIC INTEGRATION: THEORETICAL ASSUMPTIONS AND CONSEQUENCES OF EUROPEAN UNIFICATION (Princeton)

change in the state of man or in man's state that is not a uniform and unanimous improvement among all states could effectively eliminate wars: Only a genuine world government complete with enforcement power could abolish wars, and such a government, he says, is impossible.[1] He does not dismiss the first two images, however; he finds them necessary to the understanding of the forces that determine policy. (We also assume that he considers the improvement of bad states and bad men as a worthy undertaking.)

In Waltz's recommendation of a reasoned response to the real world around us lies the crux of the problem for many political pundits. The military approach to diplomacy is basically that of game theory. That is, the only information about the motives or moves of others (except that learned through espionage) derives from mathematical laws of probability. No areas of mutual interest or purpose are assumed. There can be no communication, only reciprocal impact of actions.

The delineations of the first two images have implications outside Waltz's purposes—into aspects of international affairs other than the military, particularly into the realms of political ideology and economic competition. Ideologically, setting the view that better men would improve international relations against the view that a better state is the necessary agent produces the dichotomy that **William Ernest Hocking** draws in his book STRENGTH OF MEN AND NATIONS (Harper, $3.50). He sees the issue predominantly but not exclusively as between the U.S. and the U.S.S.R. (He would also include the attempts at supranational organization with the second image.)

With reasonable qualifications, he throws his considerable weight with the first. In fact, his first premise states that "the sources of all creativity, and hence of every cultural advance, are to be found not in collectivities but in human individuals." (p. 9) His second assumption is that there exists a "universality of private experience" that is the philosophical source of his answer to both metaphysical communism and morally self-centered abstract individualism. This he sometimes calls "aboriginal democracy"—a state prior to any special relations that may arise between us as friends or foes or fellow citizens.

> "And the fundamental mental trait of this aboriginal democracy, simpler and more primitive than any actual society, is *certitude*: the indubitable identity of the world common to all, the indubitable community of the problems of existence, the indubitable freedoms and duties imposed by the common lot.
>
> "It is the absolute and final repudiation of that conception of democracy, festering to death, whereby, since no one has any certitude, the majorities of the ballot box or the market place or the publicity-whipped fashion-drift are the truly liberal ways to determine what is true, just, or beautiful." (pp. 194-95)

Like a cross between a stern Puritan preacher and a methodical classroom logician, Hocking proceeds to define the true strength of nations (moral as opposed to physical) as it derives from insight into the realities of human nature. Because there are important relativities in truth, morals, and taste, for example, we have lost sight of the above basic "certitude" and assumed that we must dispense with all firm convictions on matters of principle. In doing so, we have weakened ourselves and our nation. We must recover "the *grit* that knows how to grasp *principle without rigidity*."

Essential to Hocking's thesis is the place of motives in diplomacy. "The realist in politics knows to his cost that motives are the most formidable reality he has to deal with." (p. 5) Most important, the interpreter of motives should not be overcredulous, oversanguine, overpugnacious, oversuspicious, or the victim of some fixation as to what the facts *must* mean; he must have a shrewd and sensitive simplicity. He must know, moreover, that a motive, far from being a fixed fact, is not only malleable but makable under the pressure of necessary common aims.

The only viable diplomacy for the world situation today, says Hocking, is based upon true national strength.

POWER ON THE INTERNATIONAL SCENE

George Williams Keeton and others (eds.), THE YEAR BOOK OF WORLD AFFAIRS (Praeger)

Stephen D. Kertesz and M. A. Fitzsimons (eds.), DIPLOMACY IN A CHANGING WORLD (First of two vols.; Notre Dame)

Klaus Knorr (ed.), NATO AND AMERICAN SECURITY (Princeton)

George A. Modelski, ATOMIC ENERGY IN THE COMMUNIST BLOC (Cambridge)

Kenneth W. Thompson, CHRISTIAN ETHICS AND THE DILEMMAS OF FOREIGN POLICY (Duke)

Sir Robert Watson-Watt, MAN'S MEANS TO HIS END (On nuclear weapons by "father of radar"; Clarkson N. Potter)

[1] This point, especially the first part of it, has an interesting parallel in a recent article by Benjamin Selekman called "Sin Bravely: The Danger of Perfectionism" (*Harvard Business Review*, Jan.-Feb., 1959) in which he discusses the morality or amorality of business. No corporation, he says, could afford to be truly moral unless *all* corporations were compelled to follow the same course simultaneously. The implication here is that only government can heal the labor-management breach—another implied argument for legal sanction over moral suasion in the legitimacy dialogue. On the other hand, we might refer to Hocking's position on the problem (in his book that we discuss later).

FOR THE BUSINESS EXECUTIVE

RECENT

ADDRESSES ON INDUSTRIAL RELATIONS, 1959 SERIES (U. of Mich.)

William H. Baumer and Donald G. Herzbert, POLITICS IS YOUR BUSINESS (Authors are executives of Johnson & Johnson and Eagleton Foundation, resp.; Dial)

Sir Ernest John Pickstone Benn, SOMETHING IN THE CITY (Business life in London; Macmillan)

Robert D. Calkins, THE ART OF ADMINISTRATION AND THE ART OF SCIENCE (Indiana U., Bur. of Bus. Research)

CREATIVE COMMUNICATIONS (A practical manual for management trainees; SoundScriber Corp.)

Walter D. Fackler and Padraic P. Frucht, ADMINISTERED PRICES AND INFLATION: SOME PUBLIC POLICY ISSUES (U.S. Chamber of Commerce)

Harrison Fisher, TODAY'S BUSINESS MACHINES (Amer. Tech. Soc.)

GUIDE TO SYSTEMATIC WAGE AND SALARY ADMINISTRATION (Cal. Inst. of Tech., Industrial Rel. Sec.)

INDUSTRIAL RELATIONS HERE AND NOW: TRENDS, ISSUES, AND COMPANY PRACTICES (Am. Man. Ass'n)

MANAGING THE MATERIALS FUNCTION: TOOLS, TECHNIQUES, AND COMPANY PRACTICES (Am. Man. Ass'n)

Elmer W. Pehrson, MAN AND RAW MATERIALS (Am. Soc. for Testing Materials)

Frank C. Pierson and others, THE EDUCATION OF AMERICAN BUSINESSMEN: A STUDY OF UNIVERSITY-COLLEGE PROGRAMS IN BUSINESS ADMINISTRATION (McGraw)

Stephen S. Price, HOW TO SPEAK WITH POWER (McGraw)

PROFESSIONAL PRACTICES IN MANAGEMENT (Ass'n of Consulting Management Engineers)

PROFITABLE MANAGEMENT FOR MAIN STREET (Dun & Bradstreet)

Lydia Strong, THE EMBATTLED EXECUTIVE (Cartoons and comments on trials and tribulations of management; Am. Man. Ass'n)

Philip H. Thurston, SYSTEMS AND PROCEDURES RESPONSIBILITY: AN ADMINISTRATIVE VIEW OF THE DIVISION OF RESPONSIBILITY BETWEEN OPERATING PEOPLE AND SPECIALISTS FOR SYSTEMS AND PROCEDURES WORK (Harvard Bus. School)

Percy H. Whiting, HOW TO SPEAK AND WRITE WITH HUMOR (McGraw)

"Strength, as we are using the word, includes power, but is something more and other than power. By the 'strength' of a nation we mean its ability to affect the course of history, not simply to exist and hold its own but to do things—to bring about durable changes in the world. Strength in this sense is the *pull-together of powers under direction* toward a proposed end. . . .

"Strength, like power, is not a solitary trait: national strength exists only within a society of nations. It may be exhibited *against* others, as a capacity to impose its own will on the course of events. But it culminates in what we call *leadership*, a strength *with* others—a mental-moral relation implying some community of goal: in this relation, the more strength the less need to bring into play power or the threat of power." (p. 167)

Only from this strength can we evolve the third type of diplomacy that Hocking advocates: a course lying between the diplomacies of hard rigidity and soft appeasement, a course that aims at ameliorating the present mutual distrust and fear between the U.S. and the U.S.S.R. by concentrating on gradually altering motives and converging goals.

To support his argument, Hocking quotes Thoreau's remark that " 'all the abuses that are the objects of reform are unconsciously amended in the intercourse of friends.' " (p. 195) To open conversation, continues Hocking, is to postulate democracy. Mutual understanding comes only from a fundamental respect for human nature, which is the basis of aboriginal democracy. Genuine fraternity, for Hocking, must be the source of both liberty and justice.

Interestingly, the tension between liberty and justice permeates most of his discussion of the contrasting ideas of the U.S. and the U.S.S.R. in economics, law and rights, group morality, and the meaning of democracy. His prophet's eye lights on all sectors of the nation one by one—educators, artists, businessmen, laborers, farmers, and diplomats—probing for strengths and weaknesses.

Hocking first calls attention to symptoms of national weakness in two fields that he believes are directly pertinent to the "intangible arsenal of the cold war," education and the fine arts. His condemnation of education is especially harsh, for he feels it carries the burden of preparing the way for the third type of diplomacy. In formal education, he says, we have succumbed to a pervasive anemia in our conception of democracy, equating freedom with release from discipline and applying equality to standings rather than standards. He would remind us that the essential of education from the earliest initiation rite has been exertion and pain, without which there can be no citizenship, no self-command, no leadership. He also scores the basic immorality of two additional agencies of education: the press, which for commercial reasons often promotes the baser propensities of the public under a corrupt plea of "liberty of the press"; and advertising, which hesitates to lie with regard to facts but falsifies with lies of emotion—far the more deadly of the two, for they are irrefutable; they do not argue, but infect the mind.

In respect to the business sector of the nation, Hocking makes a

case for the educative role of private property and a case against the prevalence and strain of double morality (the conflict between personal morality and loyalty to group interests) in business. There is in both cases the common element of a rhythmic swing between the social and the individual, between fellowship and privacy, that is beneficial within a moral structure.

Some experience with private property, Hocking believes, is as essential to a normal growth toward personal maturity as is some experience with common property. A relation of man to nature as master over the inanimate is indispensable: It is the means by which man can "discover his own quality as reflected in the thriving or nonthriving, the beauty or ugliness, the order or disorder of a small segment of matter subject to his will. Private property, in this sense, is a genuine province of liberty, and a necessary factor in arriving at human maturity." (pp. 52-53)

Double morality is of course not restricted to business; but Hocking finds particularly rampant there the practice of suppressing personal scruple for the sake of a group's economic survival. He recommends on this issue an essay by Chester Barnard called *Elementary Conditions of Business Morals*. Barnard, he notes, offers no solution. Hocking himself maintains that the problem cannot be solved for one sector of society alone. The total problem in our society of the strain of double morality must be met with increasing awareness of our mutual involvement and with final resort to the individual conscience as the foundation of our democratic structure.

Foremost among the tangible realities that Hocking finds in the current international situation is that there is no pure example today of either communism or capitalism in the classic sense. All actual economies of developed nations are mixed. The differences are largely in their philosophies and practices of liberty. In fairness, he concedes the general success of tyranny in executing common purposes under revolutionary conditions. (His point is somewhat akin to Vera M. Dean's differentiation between the roles of dictatorship in a developing society and in a developed society: Only the first has some moral necessity.)

Hocking finds the early unmitigated Soviet tyranny on the wane. He further believes that it will continue to diminish, barring war, in rough proportion to the lessening of external hostility. The tolerance of the Soviet people to a formidable degree of regimentation has been due to their unremitting sense of being on the defensive in a hostile world, plus their age-old reaction to the self-assumed superiority of the Germanic peoples over the Slavic.

Hocking's practical conclusion is that from our viewpoint:

> "The Soviet system may (and perhaps should) co-exist, because for the Soviets the American system may (and perhaps should) co-exist; . . . each is ready, without treason to its own faith, to tolerate the existence of the other in an honest rivalry for achieving the highest 'material and moral good for mankind.'" (pp. 186-87)

The views of Reinhold Niebuhr lie somewhere between those of Waltz and Hocking. He believes in the ability of man to affect and improve the conduct of states even in a system of "international anarchy" (Waltz's description of the world state system) but always considering the counterforce of "original sin."

Original sin—St. Paul's "The law in my members, warring against the law that is in my mind"—has regained acceptance beside the "social gospel" to create the newer form of social Christianity according to **Reinhold Niebuhr** (in an early work recently reissued in Living Age Books, AN INTERPRETATION OF CHRISTIAN ETHICS, $1.25). The social gospel, he says, failed to make an adequate distinction between love and justice. It was "rather oblivious to the power and persistence of self-regard in both individual and collective terms"; it believed the love ethic alone sufficient to realizing social ideals. Love, says Niebuhr, may be the motive of social action, but justice must be the instrument of love; and the social gospel did not concern itself very much with the institutions of society through

FOR THE ELECTIONS

RECENT

James M. Burns, JOHN KENNEDY: A POLITICAL PROFILE (Harcourt)

William Costello, THE FACTS ABOUT NIXON (Viking)

John F. Parker, IF ELECTED, I PROMISE (Political humor by Mass. state senator; Doubleday)

Paul I. Wellman, STUART SYMINGTON: PORTRAIT OF A MAN WITH A MISSION (Doubleday)

FORTHCOMING

Michael Armine, THIS IS HUMPHREY: THE STORY OF SENATOR HUBERT H. HUMPHREY (Doubleday)

Blair Bolles, MEN OF GOOD INTENTIONS: CRISIS OF THE AMERICAN PRESIDENCY (Doubleday)

Allan Nevins (ed.), THE STRATEGY OF PEACE (Speeches of John Kennedy; Harper)

Ralph Martin and Edward Plaut, FRONT RUNNER, DARK HORSE (Practice of professional politics illustrated by cases of Kennedy and Symington; Doubleday)

which men try to achieve a tolerable justice by managing and balancing competing interests and forces. The newer gospel derives a social ethic (from the gospel ethic) that does just this, not by asking selfish people to love one another, nor by taking their self-love for granted, but under "conditions of sin," assuming the persistence of self-regard while rejecting the complacency of any form of "partial or parochial loyalty or collective self-interest." (1956 Preface) This view he develops in the section entitled "The Law of Love in Politics and Economics":

> "Political problems drive pure moralists to despair because in them the freedom of the spirit must come to terms with the contingencies of nature, the moral ideal must find a proper mechanism for its incarnation, and the ideal principle must be sacrificed to guarantee its partial realization." (p. 176)

Essentially the same tension between the real and the ideal pervades **Niebuhr's** new book, THE STRUCTURE OF NATIONS AND EMPIRES (Scribner, $5). He is still involved with the moral implications of power, the first of which is the need for intellectual honesty.

In examining the structures of historical empires, he finds that a basic characteristic is their ability to protect their own interests over substantial areas of the world and their conviction of the rightness of these interests. In fact, "rightness" involves usually a buttressing with religion or a sense of mission; religious zeal has historically accompanied the political will to power. Most of the empires of man's recent past have been based on one of the great faiths of today, Niebuhr points out, but the faiths have survived the dissolution of the imperial structures. By analyzing the ambiguities between policy statements and acts, he shows that both the U.S. and Russia—in spite of their disavowals of any taint of imperialism—are in many respects pseudo-empires. Although power is a reality, empires, for reasons that he details, are no longer viable; and the fate of these two pseudo-empires depends on their acting as nations, albeit powerful ones, at least to the extent of eschewing justification through religion or ideology.

As for relations among nations, it is time, says Niebuhr, to call a spade a spade: Some have more power than others. The weak must learn to live with the strong without resentment on the one side or guilt on the other. He insists, however, that power be restrained by responsibility so that tolerable stabilities may be established. He holds no brief for what he considers an irresponsible idealism that offers an impossible immediate utopia of peaceful universalism; he does see as a possibility an armed coexistence for a considerable period. In the small attention he pays to such mechanisms as international organizations and alliances for extended peace lies the main departure from his earlier prescription in *Ethics* that "moral purpose must actually become incorporated in adequate social mechanisms if it is not to be frustrated and corrupted." (p. 164) His counsel here is to wait the situation out and let time heal the breach as it did in the Catholic-Protestant wars.

The place of morals in the conduct of foreign affairs is described by George F. Kennan (author of the controversial theory of disengagement) in a speech made before the Princeton Theological Seminary entitled "Foreign Policy and Christian Conscience" (published in *The Atlantic*, May, 1959).

> "I should like to say at the outset that questions of method in foreign policy seem to me to be generally a much more fitting subject for Christian concern than questions of purpose. . . .

PEOPLE WILL BE TALKING ABOUT

RECENT

Ralph Barker, THE LAST BLUE MOUNTAIN (On the climb of Mt. Haramosh; Doubleday)

Menna Gallie, STRIKE FOR A KINGDOM (Novel compared to work of Dylan Thomas; Harper)

Captain Tom Gifford, ANGLERS AND MUSCLEHEADS (Dutton)

John Kobler, THE RELUCTANT SURGEON (Biography of first surgeon, John Hunter; Doubleday)

Richard Llewellyn, UP, INTO THE SINGING MOUNTAIN (Sequel to *How Green Was My Valley;* Doubleday)

Geoffrey Jenkins, A TWIST OF SAND (Best-seller sea adventure in England; Viking)

John O'Hara, OURSELVES TO KNOW (Random)

C. Northcote Parkinson, THE LAW AND THE PROFITS (Houghton)

Alexei Pisemsky, ONE THOUSAND SOULS (First U.S. publication of 19th-century Russian masterpiece; Grove)

FORTHCOMING

John Braine, THE VODI (Author of *Room at the Top;* Houghton)

Paul Gallico, THE HURRICANE STORY (Doubleday)

Jessica Mitford, THE AUTOBIOGRAPHY OF JESSICA MITFORD (Wife of Churchill's nephew; Houghton)

Agnar Mykle, LASSO ROUND THE MOON (New controversial Norwegian novelist; Dutton)

Theodore H. White, THE VIEW FROM THE 40TH FLOOR (About a magazine empire; Sloane)

William S. White, WHEN THE BIG MAN DIED (On FDR; McGraw)

Colin Wilson, RITUAL IN THE DARK (Novel by author of *The Outsider;* Houghton)

"The English historian Herbert Butterfield has shown us with great brilliance, and so has our own Reinhold Niebuhr, the irony that seems to rest on the relationship between the intentions of statesmen and the results they achieve. . . . This does not absolve the statesman of his responsibility for trying to find the measures most suitable to his purpose, but it does mean that he is best off when he is guided by firm and sound principle instead of depending exclusively on his own farsightedness and powers of calculation. . . .

"All this is quite different when we come to method. . . . A government can pursue its purpose in a patient and conciliatory and understanding way, respecting the interests of others and infusing its behavior with a high standard of decency and honesty and humanity, or it can show itself petty, exacting, devious, and self-righteous. If it behaves badly, even the most worthy of purposes will be apt to be polluted; whereas sheer good manners will bring some measure of redemption to even the most disastrous undertaking." (p. 44)

As to the truly apocalyptic dangers of our time to the natural environment in which we live,

"Here our main concern must be to see that man, whose own folly once drove him from the Garden of Eden, does not now commit the blasphemous act of destroying, whether in fear or in anger or in greed, the great and lovely world in which, even in his fallen state, he has been permitted by the grace of God to live." (p. 49)

Kennan's emphasis on the incompleteness of knowledge of even the professional diplomats, on their human inability to judge always the consequences of their acts (and how much less can the inexperienced judge!), and on their need therefore to concentrate on decent methods is well illustrated by a series of historical studies in international relations since 1870 entitled **POWER, PUBLIC OPINION, AND DIPLOMACY: ESSAYS IN HONOR OF EBER MALCOLM CARROLL BY HIS FORMER STUDENTS,** edited by **Lillian P. Wallace** and **William C. Askew** (Duke, $8.75).

For example, in John A. Murray's essay, "Foreign Policy Debated: Sir Edward Grey and His Critics, 1911-1912," the entire controversy over secret diplomacy and greater publicity for foreign affairs has many echoes today, especially in the recent outcries by large press groups against the close-lipped policies of Washington military and executive offices.

The issue was the government policy (under Grey) of throwing Britain's weight in the balance of powers with France and Russia against Germany. Attempting to bolster Russia as a deterrent to the alarming push of Germany toward the Middle East, Grey went so far as to give tacit approval to Russian encroachments on the British sphere in Persia. Against Grey were the oil interests of England as well as those who were agitating for a *rapprochement* with Germany to ameliorate growing tensions.

The upshot of the whole flurry, says Murray, was that there was only a slight lifting of the veil over secret agreements; Russia stopped short of Teheran to protect the entente; and the Haldane mission made a feeble and futile trip to Berlin. His most startling conclusion was that Germany in 1914 was evidently convinced, having judged from British criticism of Grey's anti-German and pro-Russian policies at the time, that Britain would remain neutral in the Austro-Serbian crisis!

Rodney Davis in "Lloyd George: Leader or Led in British War Aims, 1916-1918" studies Lloyd George's galvanizing 1916 election doctrine that Britain should achieve complete "knock-out victory" against Germany. Was this a leader speaking or a politican truckling to a populace inflamed by war? The consensus of authorities judged it a milder

FOR THE BUSINESS SPECIALIST

RECENT

Kurt A. Adler and Danica Deutsch (eds.), ESSAYS IN INDIVIDUAL PSYCHOLOGY: CONTEMPORARY APPLICATIONS OF ALFRED ADLER'S THEORIES (Grove)

Jack Barbash (ed.), UNIONS AND UNION LEADERSHIP: THEIR HUMAN MEANING (Harper)

Betty Bock, CONCENTRATION PATTERNS IN MANUFACTURING: SOME FINDINGS FROM AN INQUIRY INTO THE RELEVANCE OF DATA BEING USED TO MEASURE MARKET SHARES IN SPECIFIED INDUSTRIES (Nat'l Indus. Conf. Bd.)

Hollis B. Chenery and Paul G. Clark, INTERINDUSTRY ECONOMICS (Wiley)

Lewis E. Davids, DICTIONARY OF INSURANCE (Littlefield, Adams)

Donald Dewey, MONOPOLY IN ECONOMICS AND LAW (Rand-McNally)

Robert Ferber, COLLECTING FINANCIAL DATA BY CONSUMER PANEL TECHNIQUES (U. of Ill.)

C. M. Flumiani, THE SPECULATIVE SIGNIFICANCE OF THE INNER ACTION OF THE MARKET (Inst. for Econ. and Financial Research)

Edith J. Friedman (ed.), ENCYCLOPEDIA OF REAL ESTATE APPRAISING (Prentice)

Jay R. Greene and Roger L. Sisson, DYNAMIC MANAGEMENT DECISION GAMES, INCLUDING SEVEN NON-COMPUTER GAMES (Wiley)

John Gudmundsen, THE GREAT PROVIDER: THE DRAMATIC STORY OF LIFE INSURANCE IN AMERICA (Industrial Pub.)

Julian H. Handler, HOW TO SELL THE SUPERMARKETS (Fairchild)

Frank A. Hanna, STATE INCOME DIFFERENTIALS, 1919-1954 (Duke)

HOW TO REACH PEOPLE: REPORT ON AUDIENCE COMPOSITION (For TV advertisers, based on Nielson and Pulse, Inc. ratings; Television Bur. of Advertising)

Fabian Linden, THE BUSINESS OF DEPARTMENT STORES (Nat'l Indus. Conf. Bd.)

James C. T. Mao, CASES IN REAL ESTATE FINANCE (U. of Mich., Bur. of Bus. Research)

O. Hobart Mowrer, LEARNING THEORY AND THE SYMBOLIC PROCESSES (Wiley)

Paul H. Norgren and others, EMPLOYING THE NEGRO IN AMERICAN INDUSTRY: A STUDY OF MANAGEMENT PRACTICES (Indust. Rel. Counselors)

Hugh W. Sargent, CONSUMER-PRODUCT RATING PUBLICATIONS AND BUYING BEHAVIOR (U. of Ill.)

SEVERANCE PAY PATTERNS IN MANUFACTURING (Nat'l Indus. Conf. Bd.)

Edgar L. Smith, COMMON STOCKS AND BUSINESS CYCLES: A PRACTICAL ANALYSIS OF THE BASIC CAUSES AND PATTERNS OF CYCLICAL BEHAVIOUR IN ECONOMIC SERIES (William-Frederick Pr.)

R. Stansbury Stockton, WAGE POLICIES AND WAGE SURVEYS: A STUDY OF PRACTICES IN OHIO MANUFACTURING (Ohio State)

THE TOBE LECTURES IN RETAIL DISTRIBUTION AT THE HARVARD BUSINESS SCHOOL (Harvard Bus. School)

Wilfrid Walter (ed.), MODERN PUBLICITY, 1959-1960 (Viking)

Paul Wasserman, MEASUREMENT AND EVALUATION OF ORGANIZATIONAL PERFORMANCE: AN ANNOTATED BIBLIOGRAPHY (Cornell)

Benjamin Werne, LAW AND PRACTICE OF THE LABOR CONTRACT (2 vols., Callaghan)

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version of the latter. The consequences—victory, a crushed Germany, and a humiliating treaty settlement for a proud people—are known, but Davis tarries on two might-have-beens: A more reasonable peace in 1916 might have avoided the great paranoia of Nazism and averted the Bolshevik revolution. Davis rather pathetically concludes that "this writer, for one, would be more than willing to try living in a world where a reasoned and reasonable effort was made by men to live harmoniously with their fellowmen." (p. 243)

The most immediate as well as most pertinent essay is the last one, "Two Constants in Russian Foreign Policy" by John Clinton Adams. Besides its insights into a critical subject, it demonstrates some of the biting ironies of history: the hostility of Marx to what he considered the Russian menace to Europe (for Marx was German and the ancient rivalry between Germany and Russia was a virulent one), and the impassioned expressions of Pan-Slavism and Russian messianism from one hundred to four hundred years ago that read like Stalinist communiqués.

Adams presents a formidable case for his thesis that there has been a marked continuity in Russian foreign policy throughout its history, still unchanged in spite of the ideology of communism, and that the forces impelling it derive directly from Russian geography and the character of the Russian people.

These examples of diplomacies, well-intentioned but ill-considered, morally weak, or dependent on considerable background knowledge, would support Kennan's plea for a career foreign service. Charles Thayer, too, in his recent book *Diplomat* (Harper) makes a cogent case for choosing our envoys from those whose profession is diplomacy. His criticisms of both lawyers and businessmen as diplomats are quite similar: Both tend to negotiate under the assumption of appeal to a legal framework—business, for example, is conducted largely through contract. Diplomacy, however, has no such framework of sanction within which to function. It is mediation, not between the legal and the illegal, many times not even between right and wrong, but be-

tween conflicting interests deriving from national aspirations.

As a clincher, Thayer quotes the French diplomat Jusserand to the effect that "Experience has already shown and will more and more show, that no invention, no telephone, no airplane, no wireless will ever replace the knowledge of a country and the understanding of a people's disposition." (Quoted in "Our Ambassadors," a chapter from *Diplomat* published in *Harper's*, Sept., 1959, p. 35.)

One aspect of international coercion (other than military force considered unilaterally) is that of sanction applied through a supranational organization. The progression of thought of the great German historical scholar Friedrich Meinecke, whose main concern was the relation between morals and politics, is described in Richard W. Sterling's *Ethics in a World of Power: The Political Ideas of Friedrich Meinecke* (Princeton). Before World War I, Meinecke believed that the modern nation state satisfied the demands both of power politics and moral order. He later explored the causality of power politics and decided that the moral order must issue from the dictates of conscience of the responsible statesman. Shocked, however, by the example of Hitler and Nazi terror, he finally turned to a search for some supranational community that could add sanction to morality.

It is with this same conviction that Grenville Clark and Louis B. Sohn wrote *World Peace Through World Law* (Harvard) in which they detail a concrete—and highly praised—plan to co-ordinate disarmament with establishment of a world police force, through changes in the UN framework.

The other writers mentioned previously, however, have major reservations about a world government; some—like Kennan—to the efficacy of a supranational organization, others—like Hocking—to its desirability.

Although Kennan sees the UN as the germ of something "immensely necessary and immensely hopeful"—"a sense of conscience higher than the national one, a sense of fellowship of fate by which we are all increasingly bound together" ("Foreign Policy and Christian Conscience," p. 47), the idea of an international juridical regime seems to him unwise. It assumes, first, that all states, like our own, are reasonably content with their boundaries and status.

"We tend to underestimate the violence of national maladjustments and discontents elsewhere in the world if we think that they would always appear to other people as less important than the preservation of the juridical tidiness of international life." (*American Diplomacy, 1900-1950*, Mentor, 1951, p. 95)

Moreover, the principle of "one government, one vote" tends to fix the *status quo* and ignores the law of change. History indicates, he says, that the state pattern cannot be static and that the function of a system of international relationships should not be to impose a strait jacket on it but to ease its transitions, "to temper the asperities to which it often leads, to isolate and moderate the conflicts to which it gives rise, and to see that these conflicts do not assume forms too unsettling for international life in general." (p. 96) In criticizing the inflexibility of law, he is restating the implicit criticism often heard of the foreign policy of lawyers Dean Acheson and John Foster Dulles. One of the most recent examples is the book by Emmet John Hughes, onetime speechwriter for Eisenhower, *America the Vincible* (Doubleday).

Hocking's objection to the supranational organization stems from his devotion to the principle of pluralism. He maintains that all collectivities rigidify and that the inadequacy of international law is that there is no international custom as yet, except in fragments such as maritime law. He also concludes that "Diplomacy must be a perpetual improvisation" (p. 181) in view of the dynamics of history.

SEARCH as we may, we shall perhaps never find sufficient light to throw a shadow commensurate with the object. It will not be for lack of trying, however, on the part of the various authorities. And they can, undoubtedly, by projecting from different angles, relieve the density of the shadow and correct some of the distortion.

SCIENCE AND THE MILITARY

RECENT

Amasa S. Bishop, PROJECT SHERWOOD: THE U.S. PROGRAM IN CONTROLLED FUSION (Doubleday)

I. Bernard Cohen, THE BIRTH OF A NEW PHYSICS (Doubleday)

Ray Ginger (ed.), SPECTRUM: THE WORLD OF SCIENCE (Holt)

Mel Hunter, THE MISSILEMEN (Doubleday)

THE LAROUSSE ENCYCLOPEDIA OF ASTRONOMY (Intro. by Fred L. Whipple; Putnam)

Jay Luvaas, THE MILITARY LEGACY OF THE CIVIL WAR: THE EUROPEAN INHERITANCE (Chicago)

FORTHCOMING

Joe Bell, THE STAR STRUCK SEVEN (About the astronauts; Popular Mechanics Pr.)

Robert C. Cowen, FRONTIERS OF THE SEA (By natural science editor of *The Christian Science Monitor*; Doubleday)

BACKGROUND BOOKS

THE VOLUME of publication by journalists, scholars, and travelers on every region of the world appears completely overwhelming as we read through the publishers' lists these days. On the basis of reviewers' opinions and with great restraint, we have selected the following from about a year's output.

ON THE SOVIET UNION: Robert L. Allen, *Soviet Economic Warfare* (Public Affairs Pr.); George Z. F. Bereday and others (eds.), *Changing Soviet School* (Houghton); Giuseppe Boffa, *Inside the Khrushchev Era* (Marzani & Munsell); Gsovski and Grzybowski, *Government, Law and Courts in the Soviet Union and Eastern Europe* (Praeger); W. Averell Harriman, *Harriman on Russia* (S. & S.); Alex Inkeles and Raymond A. Bauer, *The Soviet Citizen* (Harvard); Arnold Kramish, *Atomic Energy in the Soviet Union* (Stanford); Klaus Mehnert, *Soviet Man and His World* (Praeger); Harrison Salisbury, *Khrushchev's Russia* (Harper); Leonard Schapiro, *The Communist Party of the Soviet Union* (Random).

ON THE FAR EAST: Michael Alexander, *Offbeat in Asia* (McKay); Ives Congar, *After Nine Hundred Years* (Fordham); Jyoti Bhusan Das Gupta, *Indo-Pakistan Relations* (Lounz); Cora du Bois and others, *The East and West Must Meet* (Mich. State U.); *The Economic Development of Thailand* (Johns Hopkins); Harold Forster, *Flowering Lotus: A View of Java* (Longmans); Richard W. Lindholm, *Viet-Nam: The First Five Years* (Mich. State U.); Albert Mayer and others, *Pilot Project, India* (U. of Cal.); George Rosen, *Industrial Change in India* (Free Pr.); T. H. Silcock, *Commonwealth Economy in Southeast Asia* (Duke); Harold M. Vinacke, *History of the Far East in Modern Times* (Appleton); Elizabeth Gray Vining, *Japan Ten Years Later* (Lippincott).

ON AFRICA: Bascom and Herskovits (eds.), *Continuity and Change in African Cultures* (U. of Chicago); F. M. Bourret, *Ghana, the Road to Independence* (Stanford); W. B. Collins, *The Perpetual Forest* (Lippincott); Meyer Fortes, *Oedipus and Job in West African Religion* (Cambridge); W. Alphaeus Hunton, *Decision in Africa* (Internat'l Pub.); E. L. R. Meyerwitz, *Akan of Ghana* (Humanities Pr.); Alan Paton, *Hope for South Africa* (Praeger); Laurens van der

HUMANITIES AND SOCIAL ISSUES

RECENT

George N. Allen, UNDERCOVER TEACHER (Newspaperman became teacher to get this prize-winning exposé; Doubleday)

E. R. Braithwaite, TO SIR, WITH LOVE (True story of Negro teacher in London slums; Prentice)

Joan Evans (ed.) THE LAMP OF BEAUTY (Essays by John Ruskin; Phaidon)

Maurice S. Friedman, MARTIN BUBER: THE LIFE OF DIALOGUE (Harper Torchbooks)

Ralph F. Fuchs, DEMOCRACY IN TRANSITION (Safeguards and threats to freedom in U.S., by law professor; Beacon)

Eugene Galanter (ed.), AUTOMATIC TEACHING: THE STATE OF THE ART (Wiley)

Ludwig Goldscheider, LEONARDO DA VINCI: PAINTINGS AND DRAWINGS (Phaidon)

Will Herberg, PROTESTANT, CATHOLIC, JEW (Anchor paperback)

Michael Howard (ed.) SOLDIERS AND GOVERNMENTS (Indiana U.)

Preston E. James (ed.), NEW VIEWPOINTS IN GEOGRAPHY: 1959 TWENTY-NINTH YEARBOOK (Nat'l Council for the Soc. Studies)

Robert F. Kennedy, THE ENEMY WITHIN (McClellan Committee findings; Harper)

Dorothy Lee (ed.), FREEDOM AND CULTURE (A collection of essays by leading American anthropologists; Spectrum Books, Prentice)

Carl Lindert, HIERONYMOUS BOSCH (Phaidon)

Seymour M. Lipset, POLITICAL MAN: ESSAYS ON THE SOCIOLOGY OF DEMOCRACY (Doubleday)

Jacques Maritain, SCHOLASTICISM AND POLITICS (Image paperback)

MOODS AND MOVEMENT IN ART (*VERVE* series; Reynal)

PROBLEMS AND POLICIES OF AMERICAN AGRICULTURE (Papers presented at Center for Agricultural Adjustment; Iowa State U.)

John Russell, GEORGES BRAQUE (Phaidon)

C. Winfield Scott, Clyde M. Hill, and Robert W. Burns (eds.), THE GREAT DEBATE: OUR SCHOOLS IN CRISIS (Spectrum Books, Prentice)

Rear Admiral E. H. Shattock, AN EXPERIMENT IN MINDFULNESS: AN ENGLISH ADMIRAL'S EXPERIENCES IN A BUDDHIST MONASTERY (Dutton)

Huston C. Smith (ed.), THE SEARCH FOR AMERICA (16 authorities analyze America's problems; Spectrum Books, Prentice)

Meyer Weinberg (ed.), ISSUES IN SOCIAL SCIENCE (Prentice)

FORTHCOMING

Harry R. Davis and Robert C. Good (eds.), REINHOLD NIEBUHR ON POLITICS (Scribner)

Jerome G. Kerwin, CATHOLIC VIEWPOINT ON CHURCH AND STATE (Hanover)

David and Vera Mace, MARRIAGE: EAST AND WEST (Doubleday)

H. E. L. Mellersh, THE STORY OF EARLY MAN: HUMAN EVOLUTION TO THE STONE AGE (Viking)

Clayton E. Williams, THE DARK ROAD TO TRIUMPH (On the last days of Jesus; Crowell)

Post, *The Lost World of the Kalahari* (Morrow).

On Europe: Raymond Aron, *France: The New Republic* (Oceana); Leslie B. Bain, *The Chosen Curse* (Macmillan); Mary M. Ball, *NATO and the European Union Movement* (Praeger); William Diebold, Jr., *The Schuman Plan* (Praeger); Nicholas Halasz, *In the Shadow of Russia: Eastern Europe in the Postwar World* (Ronald); George Louis Payne, *Britain's Scientific and Technological Manpower* (Stanford); Jan Wszelaki, *Communist Economic Strategy: The Role of East-Central Europe* (Nat'l Planning Ass'n).

On Latin America: Richard Adams, *Social Change in Latin America* (Harper); Robert Loring Allen, *Soviet Influence in Latin America* (Public Affairs Pr.); Helen M. Bailey and A. P. Nasatir, *Latin America: The Development of Its Civilization* (Prentice); F. Benham and H. A. Holley, *Short Introduction to the Economy of Latin America* (Oxford); Jose A. Benitez, *Puerto Rico and the Political Destiny of America* (Southern U. Pr.); Jules Dubois, *Fidel Castro: Rebel-Liberator or Dictator?* (Bobbs-Merrill); Gilberto Freyre, *New World in the Tropics: The Culture of Modern Brazil* (Knopf); John J. Johnson, *Political Change in Latin America* (Stanford); Edwin Lieuwen (ed.), *Role of the Military in Latin America* (Praeger); John D. Martz, *Central America: The Crisis and the Challenge* (U. of N.C.); Stacy May and Galo Plaza, *The United Fruit Company in Latin America* (Nat'l Planning Ass'n); R. Hart Phillips, *Cuba: Island of Paradox* (McDowell); Ronald M. Schneider, *Communism in Guatemala: 1944-1954* (Praeger); Edward Tomlinson, *Look Southward, Uncle* (Devin-Adair).

HISTORY, TRAVEL, AND BIOGRAPHY

RECENT

Allen Churchill, THE YEAR THE WORLD WENT MAD (About 1927; Crowell)

Richard Collier, THE CITY THAT WOULD NOT DIE: THE BOMBING OF LONDON, MAY 10-11, 1941 (Dutton)

Rupert Furneaux, THE BREAKFAST WAR (History and journalism; Crowell)

Heinz Gartmann, RINGS AROUND THE WORLD (History of transportation and communication; Morrow)

Daniel Lang, FROM HIROSHIMA TO THE MOON: CHRONICLES OF LIFE IN THE ATOMIC AGE (Reporter for *New Yorker*; S. & S.)

Norman Lewis, THE CHANGING SKY (Travel vignettes with keen observations, some have appeared in the *New Yorker*; Pantheon)

Earle Schultz and Walter Simmons, OFFICES IN THE SKY (Foreword by Clarence B. Randall, on the American skyscraper; Bobbs-Merrill)

Irving R. Levine, TRAVEL GUIDE TO RUSSIA (Doubleday)

Robert G. Hart, MCKAY'S GUIDE TO ALASKA (McKay)

FORTHCOMING

Ralph Newman (ed.), LINCOLN, UNFORGETTABLE AMERICAN: HIS FIRST 150 YEARS (Doubleday)

Leo Tolstoy, LAST DIARIES (Capricorn paperback original)

Rogier van Aerde, THE TORMENTED (On Paul Verlaine; Doubleday)

Pierre van Paassen, A CROWN OF FIRE (Biography of Savonarola in Renaissance Italy; Scribner)

SOME ECONOMIC IMPLICATIONS

The stress placed by the above authorities on change in international affairs and the need for creative response to it also has implications for the economic sphere. The adjustment to the outflow of gold and to our balance of payments deficit will require reappraisal of the major causes of the falling reserves: financial aid to underdeveloped countries and mutual security allies, private investment abroad, and the dollar drain of military establishments overseas.

Unless the newly affluent Marshall Plan benefactors and Japan can be persuaded to foot more of the bill for collective security, the until-now esoteric subject of disengagement might become an active issue.

Increased private investment overseas, partly in response to the new trade blocs of Europe, and increasing pressure for private rather than public investment in the underdeveloped areas have created a legislative drive to legalize profit sanctuaries (or for tax deferral, as it is sometimes called).

By all evidence, as *Newsweek* recently stated, U.S. business is going global. The effects of this shift have brought impressive repercussions on the national scene, what with management determination to hold down labor costs and the widespread focusing of attention on inflation in general.

Nor have education and the press been long in catching the scent. Another magazine for international business, *The International Executive*, has appeared lately. It consists of digests of books and articles on overseas business, a Forum section, and a Reference Guide, which is an annotated bibliography arranged by subject. (This latter was especially valuable in the first issue, Winter 1959, when it listed all material for 1958.) It is published quarterly by the Foundation for the Advancement of International Administration (Box 104,

Riverdale Station, New York 71) and edited by John Fayerweather of Harvard and Columbia and author of *The Executive Overseas: Administrative Attitudes and Relationships in a Foreign Culture* (Syracuse, $4.00). (Syracuse, incidentally, also published another book in this field that was especially well received: *The Art of Overseasmanship*, edited by Harlan Cleveland and Gerard J. Mangone, $3.00.)

Among the detailed services for the international businessman are *Business International*, the *New York Herald Tribune's Business Newsletter from Europe*—and of course the Department of Commerce's long-time *Foreign Commerce Weekly*.

The Committee for Economic Development has issued a booklet written by the Chairman of its Subcommittee on International Economic Policies, Thomas D. Cabot, entitled "Common Market: Economic Foundation for a U.S. of Europe?" It is intended partly to reassure those panicked by the thought that we are pricing ourselves out of world markets, and to offer some succinct statistics on the Common Market.

The biggest news in the relatively recent field of "growth economy" is the work of M.I.T.'s W. W. Rostow and his stages-of-growth theory, intended as an alternative to Marx's historical analysis. This was developed in a series of lectures given last year at Cambridge University and published by its press. *The Economist* said about these lectures, "We believe that they provide the most stimulating contribution to political and economic discussion made by any academic economist since the war." (Aug. 15, 1959, p. 409) *The Economist* also presented an abridgment of the theory in two installments in the Aug. 15 and Aug. 22 issues. *Fortune* in its December issue published his thesis as it was presented in a lecture delivered last spring in Moscow. *Fortune* countered it with an ascerbic reply by David McCord Wright and paired the two articles under the title "A Debate on the Purposes of Foreign Aid." (Rostow might have had reason to resent *Fortune's* detracting introduction to his article. A disclaimer or a rebuttal *after* the article would surely have displayed better editorial ethics.)

BOOKS RECEIVED

Baker, Samm Sinclair. *Casebook of Successful Ideas for Advertising and Selling.* Hanover House, Garden City, N.Y., 1959. $3.95.

Baumol, William J. *Business Behavior, Value and Growth.* The Macmillan Company, New York, 1959. $4.75.

Carson, William K., and Weiner, Herbert. *Ordinary and Necessary Expenses.* The Ronald Press Company, New York, 1959. $8.50.

Edwards, Corwin D. *The Price Discrimination Law.* The Brookings Institution, Washington, 1959. $10.00.

Ganzhorn, Jack. *I've Killed Men.* The Devin-Adair Company, New York, 1959. $5.00.

Greenberg, Jack. *Race Relations and American Law.* Columbia University Press, New York, 1959. $8.50.

Isard, Walter, Schooler, Eugene W., and Vietorisz, Thomas. *Industrial Complex Analysis and Regional Development.* The Technology Press of M.I.T. and John Wiley & Sons, New York, 1959.

Learned, Edmund P., and Ellsworth, Catherine C. *Gasoline Pricing in Ohio.* Division of Research, Harvard Business School, Boston, 1959. $9.00.

Minrath, William R. *Handbook of Business Mathematics.* D. Van Nostrand Company, Inc., Princeton, N.J., 1959. $9.85.

Nelson, Ralph L. *Merger Movements in American Industry, 1895-1956.* Princeton University Press, Princeton, N.J., 1959. $5.00.

Peirce, Clyde. *The Roosevelt Panama Libel Cases.* Greenwich Book Publishers, New York, 1959. $3.50.

Professional Practices in Management Consulting. Association of Consulting Management Engineers, Inc., New York, 1959. $4.00.

Ross, Irwin. *The Image Merchants.* Doubleday & Company, Inc., Garden City, N.Y., 1959. $4.50.

Schreiber, Otto L. *River of Renown.* Greenwich Book Publishers, New York, 1959. $3.00.

Seimer, Stanley J. *Suggestion Plans in American Industry.* Syracuse University Press, Syracuse, N.Y., 1959.

Smith, Edgar Lawrence. *Common Stocks and Business Cycles.* The William-Frederick Press, New York, 1959. $10.00.

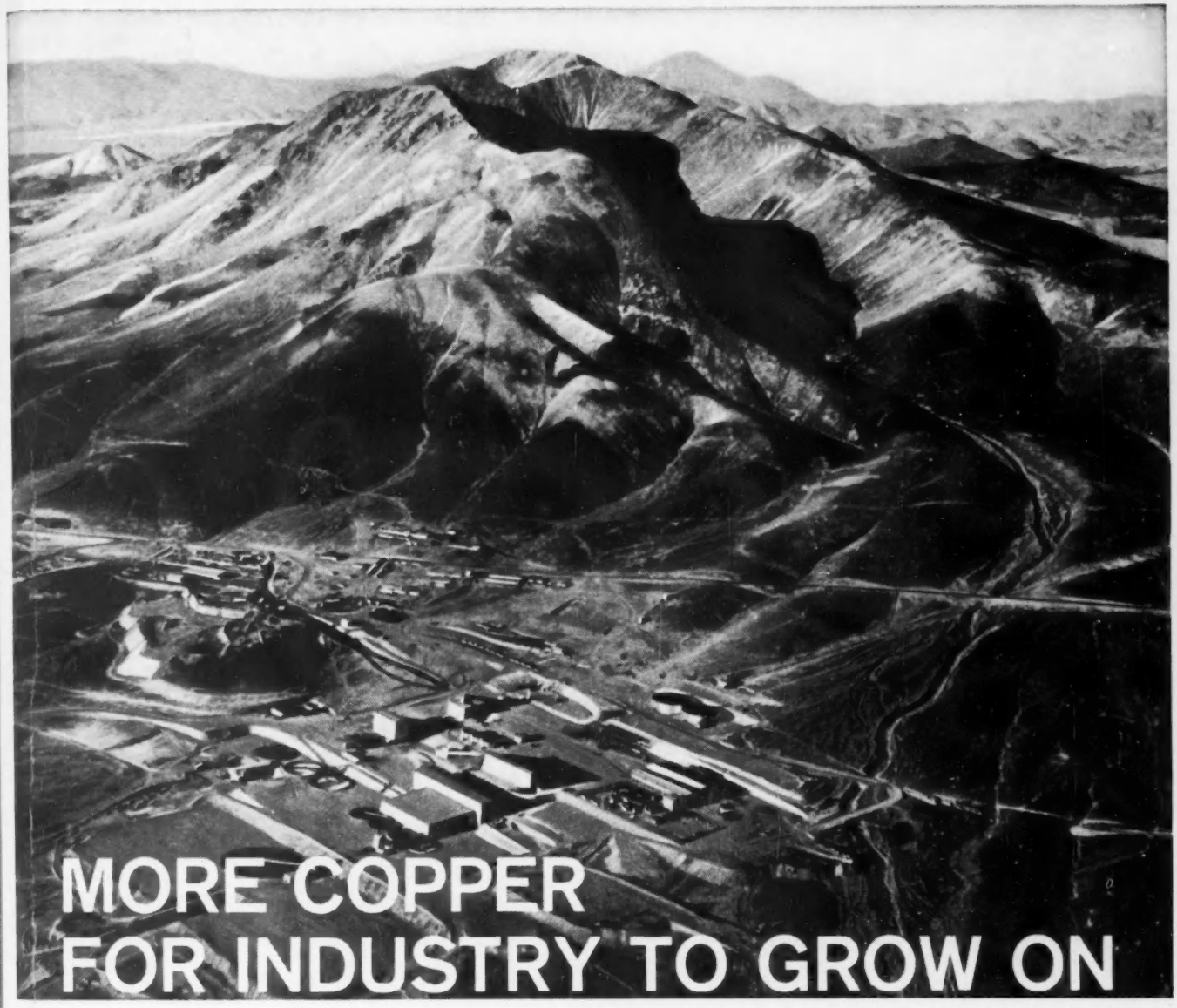
Spuhler, J. N., and others. *The Evolution of Man's Capacity for Culture.* Wayne State University Press, Detroit, 1959. $3.50.

Stockton, R. Stansbury. *Wage Policies and Wage Surveys.* Bureau of Business Research Monograph No. 95; College of Commerce and Administration, The Ohio State University, Columbus, Ohio, 1959.

Street, Donald MacQueen. *Railroad Equipment Financing.* Columbia University Press, New York, 1959. $6.00.

Williamson, Harold F., and Daum, Arnold R. *The American Petroleum Industry.* Northwestern University Press, Evanston, Ill., 1959. $7.50.

Zelomek, A. Wilbert. *A Changing America at Work and Play.* John Wiley & Sons, Inc., New York, 1959. $3.95.



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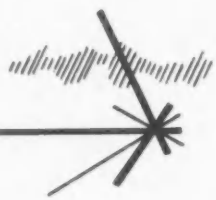

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